

Running head: DEVELOPING RAPID DAMAGE ASSESSMENT PLANS

Executive Analysis of Fire Service Operations in Emergency Management

Developing Rapid Damage Assessment Plans and Procedures for Initial Response to Major

Incidents in a Rural Setting

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### CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: \_\_\_\_\_

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### Abstract

The problem was that the criteria critical for the success of a rapid damage assessment program in a remote, rural fire district had not been determined. Because the fire district contains no incorporated cities and is the only governmental entity quartered within the fire district, during a disaster Mist-Birkenfeld RFPD is often the only available emergency service provider. Due to the limited resources in the form of personnel and apparatus available for emergency response, a means to accomplish the rapid damage assessment during a disaster needed to be developed. A potential personnel resource exists in the form of committed but untrained and unorganized community members to carry out the project. Evaluative Action Research was conducted to determine what pertinent information was contained in the available literature and whether similar programs had been developed in similar fire districts. The results of the assembled information did provide the general criteria. In the discussion section the criteria were adapted to fit the conditions at the Mist-Birkenfeld RFPD and a list of 10 critical criteria was created as an appropriate means to create a rapid damage assessment program for the fire district. By implication, other similar districts may find the criteria useful in developing their own program.

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## Introduction

Mist-Birkenfeld Rural Fire Protection District (M-B RFPD) is located in remote mountainous areas of Columbia and Clatsop Counties in northwest Oregon. The fire district operates from four stations, located carefully to cover each of seven population concentration areas using 13 pieces of emergency service apparatus. Apparatus available for emergency serviced includes one type 1 class “A” structural fire engine, one type 2 class “A” structural fire engine, one type 3 wildland interface structural fire engine, three type 6 wildland interface engines, one type 1 water tender, two type 2 water tenders, two Intermediate Life Support ambulances, one light rescue vehicle and one command/logistical support vehicle. The district currently lists 47 personnel on the roster. Two of them are paid, the rest are volunteers. Much of the district’s 135 square miles is considered *frontier* due to its difficulty to access. Wood products and natural gas storage are the only major industries in the district. Few commercial properties or businesses have weathered the economic storms of the past few years.

In the state of Oregon emergency Medical Services (EMS) are assigned to Ambulance Service Areas (ASA), essentially EMS franchises. The ASA assigned to M-B RFPD includes the fire district plus 30 additional square miles of otherwise unprotected area, for a total ASA of 165 square miles. Access to EMS for the local population is limited to that provided by our fire district. The nearest hospital is 45 to 60 minutes away by ambulance operating with lights and sirens. Because of the extended transport times, Life-Flight is called to transport serious trauma incidents when weather permits.

The local population is counted at 1300 people located in seven geographically separate population clusters that have formed, over time, into small individual communities. Until 1982 the communities tended toward social isolation in addition to being physically isolated from each

other. With the birth of a functioning fire district a common bond was created that has, over 22 years, pulled the seven population groups into a single community.

There are significant challenges to providing emergency service within the fire district during a time of critical need. Local infrastructure is severely limited, as are resources that are usually considered to be readily available during a disaster or major emergency incident. There are no incorporated cities within the fire district's jurisdiction. There are no local police stations or public works facilities located therein. The Columbia County Sheriff's office has law enforcement jurisdiction within the district along with the Oregon State Police, though no local offices exist. The Oregon Department of Transportation and Columbia County Roads Department have responsibility for road maintenance and repairs, but again have no local maintenance facilities from which to respond. The Columbia County Health Department has no local offices or personnel in the fire district. There are no doctor's offices, doctors, or local clinics in the community. In the case of the 1996 flooding incident none of these resources could travel into our area due to landslides, washouts and debris fields after the floodwaters receded.

### *The Problem*

During early 1996 our fire district experienced a major flood. One of the many problems that was identified through response to this event was that of quickly gathering damage assessment data. The problem was that there is no rapid damage assessment component within the disaster plan for Mist-Birkenfeld Rural Fire Protection District (Mist-Birkenfeld RFPD or MBRFPD). A community risk assessment has been completed followed by a district capability assessment. NIMS ICS has been adopted as the district's emergency management model, including the concept of using incident management teams for local management of a major incident or disaster. An Emergency Operations Center is in place that is designed to mitigate the

effects of disasters or other large-scale events by applying the response and recovery portions of the Columbia County All Hazards Emergency Response Plan. Incident documentation is in place as a part of preparation for incident action planning. Joint exercises are also taking place. However, rapid damage assessment has not been addressed in either of the plans.

Rapid damage assessment is a critical tool required by the EOC to determine the kinds of problems existing as a result of the triggering event (a disaster or other major emergency), the extent to which the triggering event has caused other events to occur (cascade effect), and the scope of each problem that has been identified. A successful rapid damage assessment program allows the governing body to respond quickly and appropriately to the disaster, identifying the community's needs and prioritizing for an effective response as critical resources become available. In order to be effective, the rapid damage assessment activities must be implemented at the local level.

### *The Plan*

The purpose of this project is to identify the appropriate criteria for a rapid damage assessment program plan to be incorporated into the MBRFPD Emergency Operations Plan (EOP). To accomplish this goal, evaluative action research will be carried out to address the following research questions:

1. What are the national criteria for a rapid damage assessment plan?
2. What are the criteria used by the State of Oregon for a rapid damage assessment plan?
3. What rapid damage assessment plan criteria do fire districts of similar size and make-up use?
4. What criteria should be used for a rapid assessment plan for Mist-Birkenfeld RFPD?



## Background And Significance

Mist-Birkenfeld RFPD is located in rural northwest Oregon, equidistant from Oregon's largest city, Portland, and the coastal city of Astoria. The area is adjacent to coastal subduction zones along the active Pacific Rim and several semi-active volcanic areas, some of which are located inside the city limits of Portland. East of Portland rests the Cascade Mountain Range, extending from California north through the state of Washington, home of at least three active and several dormant volcanoes. Because of the presence of these hazards a moderate risk of a significant earthquake is present in the region as well as a somewhat lower risk of volcanic activity. Mount Saint Helens is located in this region and is actively rebuilding its dome.

The region in which MBFPD is located is made up almost entirely of the heavily timbered, remotely accessed, mountainous lands that support more than 90% of the local economy. While the area west of the Cascade Mountains is generally less prone to wildland fire than the east side, major fires do occur. The most famous of these is the complex of fires known as the Tillamook Burn, destroying thousands of acres of prime timberland in a fiery march beginning less than 3 miles south of our fire district and continuing southwest to the Pacific coast near the city of Tillamook. The Biscuit Fire complex is a more recent example of a similar major fire in southwestern Oregon.

Major flooding, as in 1996, is an infrequent but disastrous occurrence for the region in which the fire district is located. During the flood of 1996 our fire district was isolated from all other surrounding regions, except by helicopter, for a period of 14 days. Communications were limited to the few cell phones available then for approximately the same period. All seven of the small communities mentioned earlier were isolated from access to the outside world and from each other. The Oregon National Guard (ONG) arrived by air to assist and to open transportation

routes closed by slides, collapses and washouts. The ONG stayed during that period, helping with emergency medical support, access to trapped and/or isolated victims, and transport of critical supplies.

Each of the above examples produced conditions in local areas and for local populations that threatened lives, degraded public health, and destroyed property on a major scale. The flooding of 1996 triggered the creation of the fire district's current disaster plan. Recent educational offerings by the Federal Emergency Management Administration's (FEMA) National Fire Academy (NFA) have helped to identify rapid damage assessment as a critical missing element.

### Literature Review

#### *Rapid Damage Assessment in Southern Florida*

In southern Florida, damage assessment is carried out at three levels (South Florida Water Management District, 2004). The initial damage assessment is carried out by a Rapid Impact Assessment and Response Team (RIAT) made up of Water Management District personnel from within an impacted area. This team is responsible to act under the leadership and authority of the Emergency Operations Center. Responsibilities include definition of impacted area boundaries and the identification and reporting of the immediate needs of the impacted regional flood control system.

The second level of damage assessment response is the Rapid Response Team. This team is made up of personnel from non-impacted areas. The responsibilities of this team include assisting the locally impacted regional field stations with resources and personnel and managing and coordinating recovery efforts.

The third level of damage assessment identified is the Damage Assessment Team. The Damage assessment teams are created during response planning and include the jurisdiction's engineering and construction professionals. These team members are assigned to one of eight teams representing local cities or communities. These teams are responsible to do the in-depth assessments of damage and to write the formal damage survey reports as the information is verified.

A Citizen Information Line assists with the process of gathering damage assessment information is the district's. Eight toll-free telephone lines are activated by the Emergency Manager to disseminate information to the public and to receive information regarding any damage occurring to the district's floodwater control systems or impacts associated with related or cascading events.

Additionally, the Water Management District maintains a 24-hour warning program to alert district leadership and key members of staff members of staff of potential or impending emergencies. This information is used to supply rapid, factual meteorological information upon which to base decisions to mobilize in response to an emergency. The district has identified trigger points at which particular levels of resources are mobilized.

The South Florida Water Management District has created their RIAT to determine the scope of the incident locally, to determine the immediate needs within the jurisdiction, and to report that information to the Emergency Operations Center. This team is formed to affect immediate local impacts rapidly and to correct priority problems. As resources become more available the agency deploys a Rapid Response Team to assist the RIAT in its response and recovery activities. A Damage Assessment Team comprised of engineers and construction professionals is then dispatched to do a comprehensive evaluation and damage report.

This program speaks directly to the formation, organization and operation of a complete damage assessment program and therefore directly addresses rapid damage assessment as defined in this paper. The material addresses research questions 1 and 4.

*A Guide to Successful Damage and Needs Assessment*

The South Pacific Disaster Reduction Programme (SPDRP) has prepared a guide document that deals directly with rapid damage assessment in the south pacific region. The document, titled *A Guide to Successful Damage and Needs Assessment*, presents a concise and detailed model for implementing the process. The opening statement describes the importance of damage assessment in a disaster setting as; “The clear and concise assessment of damages, losses and injuries in the aftermath of a disaster is a prerequisite for the effective planning and implementation of relief and recovery.” (Planitz, 1999, p. 2)

The guide sets forth several principals for relief planning. Planitz believes that at the community level local resources must be developed and used to their capacity prior to obtaining governmental help. The author suggests that to provide governmental assistance before local resources are at capacity will destroy the community’s ability to assist itself. The needs of the community population are the basis for planned assistance levels and must be assessed prior to the event that triggers the need. The author also stresses the importance of including disaster planning in the planning for long-term development as a means to mitigate the effects of disaster and reduce the community’s vulnerability. (Planitz, 1999, p. 2)

The guide lists as assessment objectives the need to determine the nature and extent of a disaster, the damage and secondary threats posed by the disaster, the needs of the local population, the capacity of the local population to respond and provide the needed response

resources, what assistance options are available and the need for additional resources in the context of long-term recovery efforts (Planitz, 1999, p. 2).

Assessment is further defined as initial assessment and detailed assessment. For the purposes of this research paper only initial assessment will be discussed. According to Planitz, initial assessment is concerned with determining the community's need for immediate relief and with prioritizing early response efforts. The assessment efforts are initiated quickly, as soon as the responders are able to safely begin their work. The process focuses on immediate humanitarian needs and generalizes the scope of the damage produced by the disaster and the resource requirements for immediate relief. The initial assessment documents social impacts and urgent needs as well as local response priorities and capabilities. The immediate and potential threats to localized areas are identified as well as the potential for cascading events that may threaten the population or community. Finally, an estimation of the community's ability to respond is made and, based upon this estimation, the need for governmental or international assistance is determined. Additionally, the initial assessment contains a concise situational statement describing what has happened and where, and a needs evaluation describing what needs to be done. (Planitz, 1999, p. 2, 3)

The guide then identifies the "keys to successful assessment" (Planitz, 1999, p. 4). Planitz opines that the assessment information must be timely, accurate and frequently updated. Surveyors must be readily available so that assessment can be carried forward as soon as conditions are safe to do so. Needs that are chronic or pre-existing should be noted separately so as not to be confused with needs produced by the emergency. Survey methodology must be consistent across the range of sites affected by the disaster. Surveys should be organized in a manner that leads easily to prioritization of response and recovery efforts. (Planitz, p. 4)

Successful assessment efforts contain the elements of planning and preparation, survey and data collection, interpretation and forecasting, reporting, and monitoring. Planning and preparation occur pre-disaster. This activity includes to first identify the potential major emergencies that may take place in a community, then determine the risk each presents within the community. Determination of the methods for collection of data and the resources necessary to complete the process in a timely manner must be completed. Methodology for data collection must be established and forms designed to be quickly used to document each point of collection. Background data should be collected and established as a baseline. Surveyors or surveyor teams should be pre-identified for training and fast deployment. Community resources should be identified. Minimum living condition standards should be adopted for use as a decision tree threshold. Agreements should be negotiated and documented between all affected public agencies and with all private organizations that possess resources or stocks that may be necessary for mitigation of a disaster or major emergency. (Planitz, 1999, p. 3, 4)

After the occurrence of a disaster or major emergency the process of mitigation must begin immediately. A critical means of determining a successful mitigation strategy is rapid damage and needs assessments. In order to prioritize the response and recovery activities accurate and timely data describing the immediate needs, damage levels and the impressions or observations of the surveyor are critical. In terms of clearly understanding the parameters of the disaster situation, Planitz suggests the survey information include the area affected, the number of people affected, mortality rates, injuries and illnesses, condition of the affected population, damage to all sectors, level of local response, response by non-governmental organizations (NGOs), and any secondary threats. Planitz suggests the surveyor determine the need for search and rescue activity, medical and health issues, water supplies, evacuation needs, clothing, shelter

and housing, food supplies, agricultural needs, lifelines and critical facilities, transportation, communication, and administration of local response and resource needs. (Planitz, 1999, p. 5)

With timely, accurate data collection occurring as planned it is important to be able to interpret the data and provide an informed forecast of the situation. Interpretation involves quantifying and comparing data from all parts of the affected area. This information provides immediate data for use in determining the scope of the incident or disaster and for response prioritization. Baseline information is critical here to use for comparison and validation of the scope of the emergency incident. By continuously assessing and evaluating, trends may be identified that may indicate significant but hidden underlying problems. Response strategies may then be implemented to deal with each of the problems identified. (Planitz, 1999, p. 6)

The resulting information is assembled into a format that those involved in management of mitigation efforts can easily use to set priorities within strategies while directing the response activities. Once the strategies are set in motion they are monitored to determine their effectiveness. (Planitz, 1999, p. 6)

#### Methodology:

Effective assessment data collection methods commonly seen during major emergencies include initial self-assessment, visual inspection, sample surveying, sentinel surveillance, detailed critical sector assessments, and interviews with key informants. Emergency responders observing conditions as they are reporting to their assigned response locations automatically do initial self-assessment. Lifeline facilities, public safety organizations, public works, and others are examples of these key responders. Visual inspection is completed typically by air. Specialist teams focusing on specific characteristics of the population generally carry out sample surveying. Sentinel surveillance is usually used in health emergency monitoring, watching for

early signs indicating actual or potential community health issues. Interviews are conducted with key informants, such as community leaders, hospital management or others. (Planitz, 1999, p.6)

The South Pacific Disaster Reduction Programme's Guide to Successful Damage and Needs Assessment stresses the need to allow each community to utilize their local resources fully in response to a disaster or major emergency incident. The guide defines initial assessment as identifying the community's immediate relief requirements and prioritizing immediate response efforts. The document clearly outlines the processes and operations involved with initial assessment and identifies reporting obligations to the EOC. The guide provides direct information on damage assessment and sets a clear standard for initial assessment, the generalized program that includes Rapid Damage Assessment as defined in this paper as a part of its process. Research questions 1 and 4 are addressed directly in this document.

#### *Baker County Disaster Recovery Plan*

Baker County, located in the State of Oregon, has developed a Disaster Recovery Plan (Baker County Department of Emergency Services, ) that addresses rapid damage assessment. The plan is basic, establishing goals rather than procedures. Rapid damage assessment is specifically identified as a local responsibility. The opening paragraph on page one describes the role of the state as "to provide resources to local governments and individuals for recovery purposes and to request a Presidential Disaster Declaration"(Baker County Department of Emergency Services, p. 1). Human needs identified are routed to the local chapter of the American Red Cross for application of their Individual Assistance Plan.

This section is pertinent to the research being conducted as an example of a local government preplanning their response to a disaster. The material also documents the County's



understanding of the State of Oregon's role in disaster response and recovery. Research questions 2 and 3 three are addresses by this literary source.

*Disaster Response and Recovery Guide for Local Government*

The State of Nevada has posted a document titled *Disaster Response and Recovery Guide for Local Government* on their Department of Emergency Management website (Nevada Department of Emergency Management, 2001). For the purposes of this research project, only those sections dealing with rapid damage assessment will be noted.

The stated goal of the guide's response and recovery program is to "alleviate human suffering, minimize property damage and facilitate a return to normal operations." To accomplish this goal is dependent upon a successful collaboration of local, state and federal governmental units and critical elements from the private sector. Communication is critical to allow these disparate resources to function together for a single purpose. To this end, state and local government provide a natural vessel within which to define the community needs and to focus the efforts of those entities providing assistance. Damage assessment is one of the more critical response actions necessary to determine the community needs and to focus the response and recovery operations. (Nevada Department of Emergency Management, Introduction)

It is of critical importance to note that as the nature of the emergency becomes more severe the need for resources increases dramatically. Planning for the event before it occurs becomes critical. Determining what resources may be needed and where they can be found is only the first step. Agreements with those who possess the resources must be forged and procedures to access the resources at need must be developed. When local resources are or will be exhausted the collaboration must be expanded to include regional resources as well as state and federal assistance. When the planned for emergency occurs, local governmental agencies are

required to quickly report observed human needs and damage assessment for the community's critical infrastructure. (Nevada Department of Emergency Management, 2001, Introduction)

Response to a major emergency or disaster includes activities initiated for life safety, property conservation and protection of local infrastructure. Among the tasks that must be completed during a response is gathering information, forming a report and communicating the report to those managing the response. One of the important uses for these rapid damage assessment reports is to document the level of human need, property damage and damage to local infrastructure forms the backbone for a declaration of disaster. This declaration is of critical importance to acquiring state and federal disaster assistance and of accessing other nonprofit organizations whose purpose is to assist in times of local or regional disaster. (Nevada Department of Emergency Management, 2001, Response)

According to the Disaster Response and Recovery Guide, the initial response to a disaster involves primarily local government. All available resources are used to provide life safety response and to conserve property within the bounds of the local government's authority. As resources are used and it becomes clear that more resources are required than are currently available a request is made to the State of Nevada for assistance. Rapid assessment is conducted during initial response to prioritize response activities and to provide documentation of the impact to the locality of the event. (Nevada Department of Emergency Management, 2001, Initial Response)

The guide defines rapid assessment as a size-up of the disaster or emergency conducted within the first 24 hours "to determine the damage to people, property and the infrastructure." This information becomes the basis for the activation of a preliminary damage assessment team, whose responsibilities include evaluating the effectiveness of the initial response, documenting

the size of the area involved, determining the casualties resulting from the event, documenting the scope of the damage and estimating the cost, and reducing the information gathered into a concise report. (Nevada Department of Emergency Management, 2001, Rapid Assessment)

According to the guide, a disaster is classified as an emergency, a major disaster, or a catastrophic disaster, listed from least impact to most impact. An *emergency* is an event that exceeds local resources to mitigate, may escalate into a major disaster or catastrophic disaster without assistance from the state, and does not exceed existing state budgeted resources. A *major disaster* is an event that results in damage of a severity to require resources outside the capabilities of affected local governments and disaster relief organizations, and that results in a state disaster declaration. A *catastrophic disaster* is an event that is responsible for large numbers of deaths or injuries and extensive damage to property and infrastructure, and exceeds available state, local and private-sector resources to initiate and maintain response activities, and will exceed state budgeted resources as well as local resources, insurance provisions and disaster relief organizations. Whatever the characterization of the event, resource requests must be based upon the information developed by local government's initial damage assessment efforts and the reports of preliminary damage assessment teams. (Nevada Department of Emergency Management, 2001, Factors for Determination of Further Need)

Nevada's Disaster Response and Recovery Guide for Local Government is a comprehensive plan for response and recovery to a natural or man caused disaster as adopted by the State of Nevada. The guide defines Rapid assessment as a size-up conducted within the first 24 hours to determine damage to people, property and the infrastructure. While the plan is applied on a statewide basis, the rapid assessment section applies very well to the focus of this

paper. This information applies directly to research questions 1 and 4 and provides an approach that is distinctively different from that chosen by Oregon.

### *Accela ERS in Glendale, California*

Glendale, California, has deployed a new hand-held computer-based communications system (City of Glendale, CA). The system allows an operator to quickly and easily create a record of damage assessed and instantly transmit it wirelessly to a central collection point accessible to the EOC. The city claims that the system significantly reduces the time required to prepare and transmit damage assessments over the old verbal wireless systems.

The system improves the accuracy and speed of information transfer following a disaster. Inspectors can be immediately sent into the impacted area to begin damage assessments, sending critical information back to the decision makers over a wireless network. Prioritization of response and use of resources enhanced. Rapid assessment is completed more effectively and efficiently. Finally, the communication enhancement also allows more efficient use of an employee's time through its use as a tool for daily inspections and reports. (City of Glendale, CA, p. 2)

The Accela ERS represents a breakthrough in emergency communications technology. Its use has potential for data collection in rural areas, especially collection of rapid damage assessment data. The material contained in this section applies directly to research question 4.

### *City of Puyallup Comprehensive Emergency Management Plan*

Within the City of Puyallup's Comprehensive Emergency Management Plan (CEMP) is a section titled *Urgent Damage Assessment* (City of Puyallup, 1998, p. 1). The process starts during initial response and continues throughout the response phase and beyond. Notable is the statement in section 4.1.1 that life safety and property protections activities are conducted

separately from damage assessment operations (City of Puyallup, p. 3). An additional comment contained in section 4.1.2 notes that information regarding immediate needs and damage to public facilities or private property must be gathered quickly to aid in setting response priorities and to determine whether state or federal assistance is needed (City of Puyallup, p. 3).

The City of Puyallup's Urgent Damage Assessment program is contained within its CEMP, and provides a clear affirmation of the approach of the State of Nevada in its Disaster Response and Recovery Guide for Local Government. This material is pertinent to research question 2, question 3 and question 4.

*Federal Emergency Management Administration (FEMA) Damage Assessment Model*

The curriculum for *Executive Analysis of Fire Service Operations in Emergency Management* (EAFSOEM), an executive officer level class developed by FEMA's National Fire Academy (NFA), contains a working model for the process of damage assessment. According to NFA, damage assessment consists of "gathering information related to the impact of an event, or series of events, on life and property within a defined area" (National Fire Academy [NFA], 2004, p. 5-2). It is presented in the text as a critical element in a response to a disaster or other major emergency. As such, the process of damage assessment should be integrated into any all hazards response and recovery plans that are developed for the community. (National Fire Academy [NFA], 2004, Chapter 5)

NFA uses the term *Immediate Damage Assessment* to describe a rapid estimate of damage at a specific incident site or within an incident area. An immediate damage assessment is made during the early stages of a major emergency, conducted upon arrival by emergency response crews, on location by local damage assessment teams, or through other resources such as citizens reporting conditions via telephone or other communications media. The purpose of

immediate damage assessment is to quickly establish the scope of the incident. Information is routed back to the Emergency Operations Center (EOC) regarding the apparent impact locally on lives and property, the likelihood that additional impacts to life or property will occur, and the probabilities that additional damage exists that has not yet been identified. The process for immediate damage assessment should be addressed within the damage assessment section of the response plan so that this critical part of disaster response is not overlooked. (NFA, 2004, p. 5-2)

From the perspective of an emergency responder, immediate damage assessment is similar to the process of incident size-up. The responder must determine whether deaths or injuries have occurred, whether there is the potential for additional deaths or injuries, whether unsafe conditions exist due to the event, and whether property damage has occurred or is likely to occur. Additionally, it will be important to note the conditions of transportation routes observed during response. Once this information is determined it must be relayed back to the emergency management officials quickly. Based upon this information the determination can be made as to whether additional emergency services are needed, and if they are needed, what services and how many of them are required. This initial flow of information from emergency responders and others may determine whether an EOC becomes operative as an emergency management tool. (NFA, 2004, p. 5-3)

The information reported to the EOC may be used for several purposes. As a part of size-up it can help those in command to develop strategic goals and tactical objectives. Another important use for this information is to assist in effectively allocating the resources locally and to determine if additional resources must be ordered to cope with the event. The information can also be shared with other agencies, increasing the efficiency of the response. (NFA, 2004, p. 5-3)

Once the initial arrival observations and report is completed, emergency management officials will begin the process of determining the specific needs and concerns of the community as a whole. They will do this by gathering and comparing the various reports relayed to them to create a picture of what has occurred and where it has occurred. Reports from emergency responders and from citizens will determine where the major life safety and property concerns exist and what hazards responders may encounter during response as well as determine the condition of streets and roads. Communication with water, sewer, natural gas, and electrical power providers will determine what lifeline services have been interrupted and the likely length of the interruption in services. Communications with police and fire service officials will ascertain what the response capability of these emergency service providers is currently and how quickly any deficiencies can be corrected. City and county public works officials will be dispatched to inspect bridges and damaged roadways as well as the city's essential facilities so that shelters can be set up, emergency operations centers established, and safe response routes determined. (NFA, 2004, p. 5-3)

Successful assessment and reporting completion time will vary considerably due to the complexity of the incident or to the size of the affected area. Typically when a natural disaster is involved the scope of the task is much greater than that of assessment of a single incident. However, functional and effective immediate damage assessment reporting can allow officials to make an accurate and detailed estimate of the impact of the event on the greater community. Strategic goals can then be established and tactical objectives can be created based upon the strategies. Once tactical objectives are understood the resources required to accomplish them become clearer and additional resources that are needed can be ordered. (NFA, 2004, p. 5-4)

As the response to the event continues additional, more detailed information may be collected and forwarded to emergency management officials. As the command structure becomes more complex, officers assuming command positions should report their observations. Command officers are encouraged to tour the areas they are assigned prior to assuming command when possible. (NFA, 2004, p. 5-4)

Planning for immediate damage assessment during a disaster or other major emergency is critical to the success of the activity. Determination of the risks associated with the various major event occurrences is critical. The NFA has determined that the best means to determine how well an individual agency is prepared to address the risks inherent to disasters or other major emergencies is to construct a risk assessment matrix. Each agency conducts a risk assessment, identifying the risks that may be present during a major emergency. Each risk identified is then assigned a frequency rating ranging from 1 (never occurs) to 10 (occurs regularly). The community's vulnerability (impact if it occurs) to each risk is then considered, again assigning a range of 1 (no impact) to 10 (high impact). The risk of triggering a cascade of additional risks is then considered using a range of 1 (isolated, no cascade) to 10 (strong cascade effect). The agency's response capability is then considered for each risk within each response group, and rated from 1 (no capability) to 10 (highly capable). Next, determine who is responsible for initial rapid damage assessment and assign a number of 1 (not conducted), 4 (by other agencies), 7 by FD and other agencies), or 10 (conducted by the fire department). Then, determine the level of clarity of procedures available in your agency for initial rapid damage assessment, from 1 (no direction), to 10 (clearly written direction). Next, determine if a SOP was developed prior to the incident and if so how strong it is written (1 = no SOP, 10 = strong SOP). Then determine whether the agency develops an incident action plan (IAP) for each event (1 = no IAP, 10 =



complete IAP every time). Next, is an incident management team (IMT) developed for each event? (1 = no, 10 = complete team every time) Is Unified Command used at multi-agency responses? (1 = never, 10 = always) Finally, Determine if strong EOC/IMT interface procedures exist (1 = none, 10 = strong procedures). Comparison of the scores of each section will indicate areas that may be weak or that need further development in the individual agency. The average score of all sections compared to a perfect score of 10 indicates the strength of the agency's risk assessment program as a whole. An example of the matrix is included in Appendix A. (NFA, 2004, p. 1-7)

Identification of target risks (those that have high potential impact to life, health, property or our environment) and assignment of responsibility to survey is essential. Essential facilities such as fire stations, police stations, emergency communication centers, city halls, hospitals, facilities that provide lifeline public services, and detention facilities top the list because they are critical to the safety of the public and provide the critical emergency responses during a disaster or other major emergency. High rise buildings, schools, elder care facilities, dams, bridges, transportation routes, and navigable streams are additional target risks. Once identified, each must be considered when planning an immediate damage assessment program within the greater community. (NFA, 2004, p. 5-6)

When the resources are available it is recommended that the list of target risks be divided and assigned to agencies that are the most familiar with each particular type. For instance, law enforcement may be assigned to survey detention facilities and emergency communications centers, EMS may be assigned to hospitals and elder care facilities, public works may receive responsibility to survey roads and bridges, and so forth. This division of labor assures that no one

agency is responsible for the whole job and enhances the efficiency of the overall task. (NFA, 2004, p. 5-6)

SOP's should exist within each agency detailing how it is to handle initial rapid damage assessment and reporting. The SOP should begin with assessing the impact of the event agency's current capability, providing a procedure for self-assessment. The SOP should then designate how available resources will be applied to accomplish initial rapid damage assessment, and should include a method for personnel to use to decide whether to commit to an individual incident or to continue with damage assessment activities (NFA, 2004, p. 5-5). Damage assessment forms are provided to assessment teams as a means to streamline the assessment process and to make it more efficient. Most forms are designed for use in post-incident assessment (NFA, 2004, p. 5-9).

#### *Local Situational Rapid Assessment*

A supplement to the class curriculum has been added that specifically denotes the importance of initial rapid damage assessment and provides an additional model for development of the program at the agency level. The name used for this model is *Rapid Assessment* and it is described as local and situational and includes all immediate response activities. (see Appendix B)

When rapid assessment is included as a natural part of immediate response information critical to the success of the mitigation strategy for the event is available to incident management personnel almost immediately. The information is clearly important to developing response priorities and allocation of resources but it is also a crucial part of requesting disaster aid from state and federal government. (Appendix B, p. 1)

In order to implement a Rapid Assessment program a plan must be devised, goals developed and procedures set in place to carry forward the Rapid Assessment activities. Once the plan is completed the program must be implemented through initial responder training. Exercises must be conducted to test the operational effectiveness of the program, then the exercises must be evaluated to determine how well the plan met the goals of the program. The plan is then adjusted and retested. When it performs according to the goals originally set for it, the plan is finalized (Appendix B, p. 1). The plan then needs to be incorporated into the Emergency Operations Plan (EOP). (Appendix B, p. 2)

There are three phases in the completion of damage assessment at the agency level. The first phase is Rapid Assessment, taking place within hours of an event using local resources to determine life safety needs, immediate hazards, and impact to critical lifelines. The second phase is Preliminary Damage Assessment, determining the amount damage reported and placing a dollar value on the damage. The third phase is Combined Verification, involving re-inspection by specialized personnel to verify the actual value in dollars of the impact to the local community. (Appendix B, p. 1)

As with the Initial Rapid Assessment model the work is done largely by emergency responders, volunteer community organizations, and key persons from local businesses or industries. The information is then reported to an identified location, the office of emergency management. If an EOC has been activated the information should be taken by a person designated by the Emergency Manager. (Appendix B, p. 2)

Development of Rapid Assessment procedures is the first task in implementing the program. The objectives include developing a community profile, sectoring the community, performing a risk assessment by sector, determining required resources, developing

communications procedures, and developing exercise and evaluation procedures. Once completed, the information may be used to develop the community's Rapid Assessment Capability. (Appendix B, p. 2)

#### *Developing a Community Profile and Sectoring the Community*

The community profile is essentially a snapshot of the community. Major structures and geographic features are identified, along with natural or man-made boundaries. It also identifies *Disaster Intelligence Targets* such as key facilities and population concentrations. Essential facilities such as fire and police stations, medical facilities, utility substations, lifelines and shelters, are located and listed. Available private sector resources such as equipment, lumber or hardware supplies are located and listed. Major transportation routes are noted. Population shifts that occur regularly during the day or during the year are identified. Potential hazards are listed along with the warning time that may be expected for each. Personnel and equipment normally on duty for emergency response is identified as on-duty resources. Staffing patterns for responding personnel are determined and coordinated with school and work schedules to provide a seamless flow of information for assessment purposes. (Appendix B, p. 2)

Sectoring is the process of dividing the community into smaller, logically homogenous units. Mountains, rivers, lakes and other geographical features may form natural barriers to emergency response and to the assessment process. These features may be used to form natural sector boundaries. Population concentrations within the community may also be used to determine sector locations. Populations with special needs, such as senior citizens or school children, may rate sector designation. Major transportation routes are critical for emergency response and for evacuation of residents. They may also be a convenient man-made boundary for

a sector designation. Sectors act as addresses when reporting or collecting damage assessment data. (Appendix B, p. 4)

### *Determining Risk*

When the community profile is completed and sectoring has been determined, a risk assessment is performed. Each hazard is identified as having a potential impact within the community to each sector designated. A list of potential community risks compiled by FEMA is included in Appendix A. The goal is to determine what the risk of the hazard occurring in the community and the impact that it might have if it did occur. Local population densities and demographics must be considered. Essential facilities should be examined to determine their resistance to each hazard. What hazardous materials are stored or transported in the community and what is the risk to the community due to them during a hazard event. Hospital, schools, nursing homes, jails, and other special facilities have populations that require special care. What is the impact of the identified hazard on these populations? What effect will the hazard have on the community's lifelines (electricity, gas, sewer, water, roads)? (Appendix B, p. 4)

Once risk has been determined, consider the potential for the *cascade effect*. An example of a cascade effect occurs when an earthquake occurs, causing numerous secondary emergencies such as building collapse, fire, dam failure, landslides, transportation system failure, failure of community lifelines, or communications failures. The risks posed by potential cascading events may be enormous. (NFA, 2004, p. 3-18)

One method for determining the risk attached to potential hazards is presented in the EAFSOEM curriculum (NFA, 2004, p. 3-19) and is presented on page 23 above. The worksheets for this process are included in Appendix I. (NFA, 2004, p. 3-26)

### *Assessing Availability of Response Resources*

Assessment priorities must be established in the rapid assessment procedures. Within this damage assessment model, the first priority is listed as assessment of the impact to essential facilities. These are the locations and structures where emergency response resources reside. The capability of normally available emergency response resources is heavily dependant on their ability to respond. Damage to essential facilities can dramatically reduce the availability of those resources. (Appendix B, p. 5)

The next priority focuses on life safety, particularly in those sectors where high-risk populations exist and hazard areas where search and rescue situations may be encountered. (Appendix B, p. 5)

Lifelines, such as utilities, communications, electricity and gas service, are the third priority. Lifelines make it possible for healthy populations to survive during disasters or other major emergencies. (Appendix B, p. 5)

#### *Determining Staffing Patterns and Resource Requirements*

This assessment model lists the categories of personnel to be addressed as rapid assessment personnel, police, fire and public works personnel, non-response personnel, community groups, and additional personnel who may be called for duty or recalled to duty. Personnel scheduled for duty during the incident will require the equipment and supplies necessary to rapidly assess the conditions in local areas record their observations, then they will communicate the data collected to the Emergency Manager or to EOC personnel. (Appendix B, p. 5)

The first category to consider is rapid assessment personnel. These personnel are dedicated specifically to performing rapid damage assessment activities and have no other duties during the incident. Next, fire personnel, police personnel and public works personnel may be

required to gather rapid damage assessment information early in a sudden onset event such as a disaster while responding to the individual emergencies that make up the disaster. Non-response personnel may be designated to provide rapid damage assessment information regarding essential facilities from each sector without reducing the response capability of the facility emergency response personnel. Additionally, community groups may be identified that can provide large amounts of rapid damage assessment information due to being experienced working together for common goals. (Appendix B, page 6)

All personnel responding at any level to mitigate the conditions produced by a disaster or major emergency must be adequately trained to complete the job safely and efficiently. Resources needed for these personnel vary according to the type of organization. Normally, transportation can be arranged within the group but it may be necessary to plan transportation if it is not otherwise available. (Appendix B, p. 6)

### *Collecting and Organizing Data*

Determining what information is critically needed in a timely manner is the first step in creating a communications plan. Once information needs are determined a means of rapidly noting the information in the field, usually a form, must be provided for collection. The forms provide a standard for organizing and reporting information gathered.

Information represented on the assessment form should include at least life safety information (search and rescue information, deaths & injuries and evacuation needs), status of lifelines (gas, electricity water and transportation), status of essential facilities (police and fire stations, shelters, medical facilities, communication system), imminent hazards, status of access routes, descriptions of major problems, and status of resources committed and those that are still needed.

*Establishing A Method For Communicating Damage Information*

Once damage assessment information is collected, the information must be communicated in a manner that assures that it will reach the appropriate personnel in a timely manner. A communications plan should be developed that establishes a central collection point for information reporting and for processing the damage survey reports. Next, a process for each reporting party to move the information towards the central collection point must be identified and a means to transmit the information must then be established for all those who are expected to communicate the information. Once received at the central collection point, the communication plan must specify how the information is sorted and passed on to appropriate EOC personnel. (Appendix B, p. 7)

*Receiving Data at the EOC*

Next to be developed must be a means, either electronic or paper, for rapid data collection and recording at the EOC in a format where critical data can be quickly identified and used as the information is reported from the field. The importance of the information arriving for processing during a disaster requires the report taker to accurately document and compile the information. The compiled information is then quickly passed on to appropriate personnel at the EOC. (Appendix B, p. 7)

*Summary*

The NFA model for immediate damage assessment provides a direct linkage between the fire district response and the emergency management personnel at a critical time when information is desperately needed to determine the scope of the event. The model provides a means to obtain that critical information quickly and effectively. A means for determining the individual risks and for weighing each risk as to its impact is provided, along with a means for



evaluating the agency's readiness to respond effectively to a large-scale incident. The materials contained in the NFA student manual and in the Rapid Damage Assessment Student Manual (see Appendix B) are current and relate directly to research questions one, three and four.

#### *American Red Cross*

The role of the American Red Cross in rapid damage assessment includes collection of much of the information that is needed by an EOC to determine the needs of a community immediately after a disaster occurs. Red Cross volunteers are trained in damage assessment information collection at several levels and are very effective when they are on scene early. Predictable disasters such, as floods or hurricanes, allow a proactive approach, notifying and dispatching personnel to the locations even before the event occurs. Red Cross also has the technology and resources to document and store massive amounts of damage assessment information centrally. Much of the information can be made available to an EOC by request. For major disasters Red Cross can access satellite imagery from FEMA's geo-system. While the information gathered by Red Cross is generally used by the organization to determine the scope of the disaster and the needs that may be generated because of the disaster, the information can also be accessed by FEMA, state and local agencies to assist in documenting the disasters officially. (American Red Cross, 2005)

For recruiting, training and testing volunteers Red Cross uses the Internet to good advantage. Additionally, the Internet is now being used to gather damage assessment information directly from the people who are affected most through use of on-line surveys (American Red Cross, 2004).

FEMA's approach to disaster mitigation in the literature referenced above is both preparation and prevention. The community's vulnerability to risk should be identified and

actions taken to reduce it as much as possible. One means of reducing both risk and vulnerability is to identify a disaster's impacts on a community quickly so that the community's critical needs can be identified and appropriate resources can be applied where they are needed most. When rapid damage assessment is conducted following a disaster, local resources become more effective and additional needed resources are identified quickly and accessed through state and federal sources. FEMA has set a national standard for rapid damage assessment and is currently teaching the standard through the National Fire Academy. This section applies directly to research questions 1 and 4.

### ***Applied Technology Council***

The Applied Technology Council (ATC) provides access to research, reports, and technical information regarding engineering applications for hazard mitigation. One of its series of studies is the "ATC 20" series, dealing with building safety evaluation following an earthquake. The series includes the original ATC 20: Procedures for Postearthquake Safety Evaluation of Buildings; the ATC 20-1 Field Manual; the ATC 20-2 Addendum to the ATC 20; and the ATC 20-3 report, titled Case Studies in Rapid Postearthquake Safety Evaluation of Buildings, is used by many agencies as its standard for damage assessment of affected structures. (Applied Technology Council [ATC], 2005)

Numerous forms and placards are available at this site. However, only one deals directly with rapid damage assessment operations. The ATC 20 Rapid Evaluation Safety Assessment Form is designed for the purpose of documenting a rapid damage assessment survey. It is comprised of a single sheet of paper divided into five sections. The first identifies the person doing the inspection. The second section provides a quickly completed description of the building, using one word blanks to fill and simple check boxes. The third section provides the

inspector's evaluation of the building, again using simple check boxes to document the inspector's observations. The fourth section involves a posting of an appropriate placard, denoting the structure as inspected and safe (green), restricted use only (yellow), or unsafe to use (red). The fifth section provides an opportunity for the inspector to note any further action that may be needed at the location. (ATC, 2005, Forms & Placards)

There is also a report on Wind and Flood Hazard Mitigation, ATC 45. The section dealing with post-disaster safety evaluation of buildings affected by wind or flood events adds materially to that available for seismic events by broadening the scope of structural damage addresses to include damage from flood waters, slides, mud flows and from high wind events such as hurricanes. (ATC, 2005, Wind and Floods)

Also offered by ATC is Building Safety Evaluation software for Palm Operating System PDAs. Listed as ATC-20i Version 1, the software can place the procedures and forms developed in the ATC 20 series literally in the palm of your hand, making documentation and storage of assessment information quick and easy. The product can be licensed annually by paying a license fee for each PDA used, or it can be purchased outright and installed on you PDA. (ATC, 2005, ATC-20i)

While ATC is mainly concerned with structural impacts following disasters, the material was deemed useful in that it demonstrates that there is the potential for a portable, hand-held electronic device capable of rapidly accepting and storing for later retrieval mass quantities of information, including life safety and public health information along with the current structural data. When that occurs it will set a new standard for data collection and storage. This information affects the future possibilities for research questions 1, 2, 3, and 4.

*Oregon's Natural Hazard Mitigation Plan*

The State of Oregon's Natural Hazard Mitigation Plan (NHMP) addresses the activities that the State of Oregon plans to engage in when disaster strikes (State of Oregon, ). The plan does not address rapid damage assessment except to note that damage assessment is considered a function of local government.

This section is included to demonstrate that Oregon's NHMP does not address rapid damage assessment directly. The information has relevance for research question 2.

*Oregon Emergency Management's Disaster Recovery Assistance Guidebook*

According to the Oregon Emergency Management's Disaster Recovery Assistance Guidebook (Oregon Emergency Management [OEM], 2004, p. I-1), initial damage assessment during a disaster is the responsibility of local resources. The handbook defines initial damage assessment as "examining the damages and costs related to a disaster, the impact of the disaster on the community, and which state or federal programs are most appropriate possibilities for providing needed assistance". Its purpose is to rapidly but accurately assess initial damage and other impacts to local communities that may require state or federal resources to mitigate effectively. The initial damage assessment is organized and supervised by the local Emergency Program Manager. (OEM, p. I-1)

Preliminary Damage Assessments are also mentioned in the Disaster Recovery Assistance Guidebook under the section discussing American Red Cross response. The section describes the process as a simple "Windshield Survey", the purpose of which is to determine the geographical extent of the disaster, the characteristics of the area impacted, the general needs of the area, road conditions, condition of transportation systems, utility stats, number and type of

dwellings affected, and whether the conditions are likely to improve or worsen. PDAs are a fast way of developing a general picture of local conditions. (OEM, 2004, p. I-2)

Other sources of rapid damage assessment data identified in the Disaster Recovery Assistance Guidebook are law enforcement and fire service agencies, neighborhood groups, local shelters and hospitals, the media, and aerial surveys. (OEM, 2004, p. I-2)

This section demonstrates some of the impacts the Oregon Department of Emergency Management has on local response and recovery efforts. While Oregon does not directly provide services such as rapid damage assessment, it recognizes the importance of such activities and provides both direct and indirect resources to those public agencies or private organizations that do provide them, defining the state's role as one of support. This information directly addresses research question 2.

## Procedures

### *Definition of Terms*

1. "Mist Birkenfeld Rural Fire Protection District" (Mist-Birkenfeld RFPD or M-B RFPD) means a local government entity organized as a rural fire district. The district provides fire suppression, Rescue and Search and Rescue services to 135 square miles and EMS services to about 165 square miles in western Columbia County in the state of Oregon. The area served is considered rural/frontier in nature, and has no cities incorporated within its boundaries.
2. "Incident Action Plan" means the plan prepared in the Emergency Operations Center (EOC) or by an Incident Management Team (IMT) to mitigate an emergency incident containing the emergency response objectives reflecting overall priorities

and supporting activities for a designated period. The plan is shared with supporting agencies.

3. “Cascade Effect” means the secondary damage that is produced as a result of the disaster or major emergency. In the case of an earthquake cascade events might include flooding due to the failure of a dam or fire due to a broken gas pipe, and so on.

4. “CEMP” means a comprehensive Emergency Management Plan prepared by the governing body of a public agency establishing the planned response to extraordinary emergency situations associated with natural and man-made disasters, technological incidents, and national security emergencies in or affecting the jurisdiction of the governing body.

5. “Damage Assessment Team” means a team that conducts on-the-ground surveys of damage in the affected area(s), usually consisting of one member each from public works, emergency management, utilities, health, and law public safety.

6. “Damage Survey Report” means a standardized report of property damage, damage to local community infrastructure, and of the observed unmet of the local population.

7. “Disaster” means a sudden and extraordinary calamity that inflicts extraordinary loss of life or property, damage to community infrastructure, or damage to local economic conditions.

8. “Emergency” means a condition that places at risk life, property, or the environment requiring a response from local, state or federal resources to mitigate the condition and restore necessary public amenities.

9. “Emergency Operations Center” means a room or complex where an Incident Management Team oversees response to and recovery from a disaster or major emergency, applying the jurisdiction’s emergency response plan.
10. “Emergency Response Plan” means a document that includes the jurisdiction’s planned response to and recovery from a disaster or major emergency, describes the chain of command, assigns responsibilities for the functions of command, assigns goals and objectives for preparedness for and mitigation of predetermined risks, establishes a communications protocol, establishes a default organization for the response and recovery operations for each risk, and provides for the direction and control of the components of the response or recovery organizations.
11. “Essential Facility” means a facility without which the community will be placed at risk during an emergency situation.
12. “Resources” means equipment, materials, personnel and finances that are available for use for a specified purpose.
13. “Essential Facilities” means facilities that are essential during an emergency.
14. “Life-line Public Services” means those services, such as electricity, power, water, gas, and sewer, the lack of which may put the lives or health of the public at risk, particularly the elderly, the very young and those who are disabled.
15. “Target Risks” means those locations that have high potential impact to life, health, property or the environment. Fire stations, police stations, emergency communication centers, city halls, hospitals, detention facilities, and those locations that provide lifeline public services are examples of target risks.

*Research Project Desired Outcome*

The desired outcome of this research is to identify the structural and operational criteria for a rapid damage assessment process to be annexed to the fire district EOP. The criteria should result in a process that is designed to obtain information critical for the operation of an EOC and that is appropriate to the conditions and capabilities of MBRFPD, a rural public safety emergency service provider.

*Sources of Information*

Research shall be conducted within the available literature directly pertaining to each of the research questions. Each literary selection shall be reviewed and the portions pertaining to any of the research questions documented within the Literature Review section. This material shall then be organized and listed in the Results section, then it will be used to suggest rapid damage assessment criteria, support suggested criteria, or to refute suggested criteria.

Research shall also be conducted within the fire service community to determine what rapid damage assessment criteria are being used by fire districts of similar size and make-up. The means of obtaining this information shall be to make contact directly with districts selected for their commonality with Mist-Birkenfeld RFPD in person or by telephone. Each district so contacted will be asked the same questions. The first question shall be “Does your fire district (department) have a plan for rapid damage assessment in case of a disaster or other major emergency?” If the answer is “yes” the district will be asked if our fire district could receive a copy of that information along with permission to include it within our plan. If the answer is “no” the district will be thanked for their assistance and the contact will end. The material gathered will be included in the Literature Review section and applied to the determination of existing rapid damage assessment criteria as noted above.



A general call for information within the state of Oregon shall be also made via the web-based Oregon Fire Bulletin. This bulletin board is monitored regularly by fire service agencies across Oregon and in other states as well. Information gathered through this source shall be directly considered if the agency is of similar size and make-up to Mist-Birkenfeld RFPD.

The information and data gathered through the methods described above shall be thoroughly evaluated within the Discussion section. Rapid damage assessment criteria shall be developed that can be readily implemented using physical and financial resources expected to be generally available for program development by a rural fire district. Criteria shall be assembled into a format easily read and understood, then it will be listed in the recommendations section in outline form. In addition, resources identified as necessary but not yet existing shall be listed in the form of program objectives within the Recommendations section. The recommendations shall be presented to the agency's Board of Directors for consideration with a recommendation for adoption.

Additional information supporting the criteria selection process or recommendations shall be included as appendices.

#### *Application to FEMA Goals and Objectives*

The research undertaken and the resulting criteria will benefit those who are elderly, those who are disable or infirm, and those who are very young, in accord with FEMA objectives. The process of rapid damage assessment quickly identifies critical needs, especially among these at risk populations, and allows the principles of triage to be applied with available resources that are then used according to the triage priorities.

This research is conducted in concert with the EAFSOEM Unit 1 terminal objective for each agency to analyze its level of preparedness (NFA, 2004, p. 1-1), Unit 3 terminal objective to

describe and assess risks in each community (NFA, p. 3-1), Unit 4 objective 1 to identify major issues a community may face during a large scale incident (NFA, p. 4-1), and Unit 5 terminal objective to collect and use damage assessment information during the emergency phase of the incident (NFA, p. 5-1).

All research information taken from on-line sources was obtained from computers located at Mist-Birkenfeld Rural Fire Protection District, 12525 Highway 202, Mist, Oregon. All other written research information was obtained from the National Fire Academy (NFA) Learning Resource Center LRC, located in Emmitsburg, Maryland or directly from publications located in the library of M-B RFPD.

#### *Assumptions and Limitations*

There is an implied assumption that data generated in such places as Florida, Nevada, Washington and California generally is generally representative of data on rapid damage assessment that could be generated in most other parts of the nation. In doing cross comparisons between the data used and that available locally the assumption appears to be generally true.

#### *Use of State of Oregon Standards*

The applicability of the results of the study may be slightly compromised in states that use different certification criteria, procedures, and levels of care (OARs, 2002).

#### *Rural Location of Fire District*

Because the of the remote location of the researcher and the distance to available research libraries, practical access to these facilities was not an option, with the exception of the NFA library at Emmitsburg, MD. Literature searches were therefore confined to on-line sources available internationally via the Internet.

## Results

Results are presented as they apply to each of the four research questions.

***Research Question One:*** *What are the national criteria for a rapid damage assessment plan?*

National Rapid Damage Assessment criteria are listed below.

### *Purpose*

The purpose of Rapid Damage Assessment is to quickly establish the scope of an incident. This is accomplished by rapidly estimating the damage at a specific site or within an incident area during the early stages of the incident, then passing the information is forwarded to a central collection point for processing and dissemination (NFA, 2004, p. 5-2).

Additionally, rapid collection of damage assessment data is critical when requesting assistance from state, federal or nonprofit sources. (Appendix II, p. 1)

### *Planning*

The first step in Rapid Damage Assessment is to determine the inherent risks to the community from natural or human caused disasters, to determine the level of the community's vulnerability to each of these risks, and to design a tool to gather damage assessment data quickly during the first few hours of the event as a means of quickly assessing the scope of the event and mobilizing all available resources to mitigate its effects. (NFA, 2004, Chapter 1).

The planning process continues even after the first operational test. Evaluation and adaption continue until the plan performs according to its original goals. The plan is then finalized and incorporated into the EOP. (Appendix II, p. 2)

One resource that can be used by local jurisdictions to gather damage assessment information is the American Red Cross. When their volunteers are on the scene following a disaster, rapid damage assessment data may be obtained from them and forwarded to an EOC

regularly. Though not required, it is best to include the Red Cross volunteers in planning and training in order to take full advantage of their presence. (American Red Cross, 2005)

### *Target Risks*

Target Risks are those that have high potential impact to life, health, property or the environment. Fire stations, police stations, emergency communication centers, city halls, hospitals, detention facilities, and those locations that provide lifeline public services are examples of target risks. Target Risks must be identified and plans devised to quickly establish their ability to function. High-rise buildings, schools, elder care facilities, bridges, navigable streams, dams, and transportation routes pose additional target risks. When possible, target risks should be assigned specific resources with responsibility to Rapid Damage Assessment. (NFA, 2004, p. 5-6)

### *Agency SOG's*

Each agency designated as an essential facility should have a process identified in a SOP or SOG that directs personnel in self-assessing the facility and the capability of the service that it provides (NFA, 2004, p. 5-9).

### *Forms*

Rapid Damage Assessment forms should be identified or developed that assist the observer to record the important data quickly and to pass the information on efficiently. Their design should encourage use as tools for post incident assessment (NFA, 2004, p. 5-9).

Training is available through ATC in completing rapid damage assessment and in the documentation of the results. Placards and forms are also available from this nonprofit company to complete the task quickly and efficiently without the need to create them. Additionally, if there is the expectation of numerous incidents requiring rapid damage assessment reporting,

electronic assistance is available in the form of software to turn a Palm PDA into a documentation and data storage tool to reduce the time required on scene and in the reporting process. (ATC, 2005, ATC-20i)

### *Developing Sources Of Information*

Sources of rapid damage information must be developed to include essential facilities, target risks and all sectors identified within the community. When possible, an information source should be identified and a backup source identified for the same information in case the primary source is unavailable. (Appendix II, p. 5)

The data source for essential facilities should be a person or position located at the facility that has been trained to do a quick evaluation of the facility's ability to function in its assigned response role. Whenever possible, the person or position should not be an emergency responder. (Appendix II, p. 6)

As noted above, the American Red Cross is an excellent source of rapid damage assessment information if they are on scene. (American Red Cross, 2005)

### *Training*

Surprisingly, here is very little information on specific training for rapid damage assessment in the literature researched or in the materials provided in response to the Internet query. The Rapid Damage Assessment Student manual (see Appendix B, p. 2) suggests the need for responder training followed by practical exercises. Planitz suggests that training should occur for (damage assessment) surveyors or surveyor teams (Planitz, 1999, p.3, 4). The Rapid Damage Assessment Student Manual reproduced in Appendix B (p. 6) suggests the use of community groups for damage assessment if they are properly trained. Additionally, the City of Newberg's

Building Division Annex requires designing training activities for all personnel included in disaster related activities (see Appendix C, Section B.1).

### *Collecting Data*

Rapid Damage Assessment data gathered regarding the community should include the number of deaths, injuries and trapped persons, an estimate of property damage (including severity), any hazardous conditions encountered or observed, the condition of access routes to the scene, and a determination if further damage is likely to occur over time. (NFA, 2004, Chapter 5).

Life safety information is the first priority. How many people trapped? Where and how? How many deaths? How many injured? Is evacuation needed and if so where and how many must be sheltered? These are all important life safety questions that decision makers must consider. (Appendix II, p. 8)

Community lifelines should also be evaluated to determine the availability of basic life sustaining services. These include water, electricity, gas, sewer, and transportation routes. (Appendix II, p. 5 & 8)

Essential facilities must also be evaluated for their capabilities to respond. Police, fire and ems services, shelter status, hospital capability and communication systems must all be evaluated and their response status determined in order. (Appendix II, p. 8)

### *Use of Data at the EOC*

Data gathered and disseminated to the EOC should be used as a tool to assist emergency management tool to quickly develop an incident strategy, to more effectively allocate local resources, and to demonstrate the need to request additional resources from surrounding areas and from the state or federal government. (Appendix II, p. 6)

*Part of the Plan*

The completed plan for Rapid Damage Assessment should be included within the Damage Assessment section of the fire district's Emergency Operations Plan (EOP). (NFA, 2004, P. 5-2).

***Research Question Two: What are the Criteria used by the State of Oregon for a Rapid Damage Assessment Plan?***

Although the State of Oregon does address damage assessment in their disaster plan, the researcher was unable to find any reference to rapid damage assessment at the local level (Oregon Department of Emergency Management [OEM], 1997). Instead, the State of Oregon chooses to empower local governments and their representative associations to assess vulnerability and risk, create mitigation strategies, and to carry out those strategies during disasters or other major emergencies (OEM, Building Local Capacity).

According to the Oregon Emergency Management's Disaster Recovery Assistance Guidebook (Oregon Emergency Management [OEM], 2004, p. I-1), initial damage assessment during a disaster is the responsibility of local resources. The handbook defines initial damage assessment as "examining the damages and costs related to a disaster, the impact of the disaster on the community, and which state or federal programs are most appropriate possibilities for providing needed assistance". The purpose of initial damage assessment is to rapidly but accurately assess initial damage and other impacts to the local area, the mitigation of which may require state or federal resources. The initial damage assessment is organized and supervised by the local Emergency Program Manager. (OEM, p. I-1)

The State of Oregon's role in disaster recovery is further defined in the Baker County Department of Emergency Services Disaster Recovery Plan as "to provide resources to local

governments and individuals for recovery purposes and to request a Presidential Disaster Declaration” (Baker County Department of Emergency Services). Baker County goes on to note that “Initial damage assessment by local governments is performed to collect rough estimates of type, extent and probable costs” of damage in the local areas (Baker County Department of Emergency Services, p. 1).

The state also supports the disaster response efforts of private nonprofit organizations such as Red Cross and Salvation Army (OEM, 2004, p. I-2), and associations that support and represent local governments and other special districts. Special Districts Association of Oregon (SDAO) and the Oregon Emergency Management Association (OEMA) are examples of such associations (Baker County Department of Emergency Services, p. 1).

Preliminary Damage Assessments are also mentioned in the Disaster Recovery Assistance Guidebook under the section discussing American Red Cross response. The section describes the process as a simple “Windshield Survey”, the purpose of which is to determine the geographical extent of the disaster, the characteristics of the area impacted, the general needs of the area, road conditions, condition of transportation systems, utility status, number and type of dwellings affected, and whether the conditions are likely to improve or to worsen. (OEM, 2004, p. I-2)

Other sources of rapid damage assessment data identified in the Disaster Recovery Assistance Guidebook are law enforcement and fire service agencies, neighborhood groups, local shelters and hospitals, the media, and aerial surveys. (OEM, 2004, p. I-2)



***Research Question Three: What Rapid Damage Assessment Plan Criteria Do Fire Districts of Similar Size and Make-Up Use?***

There were 30 regional fire districts of similar size and makeup to Mist-Birkenfeld RFPD contacted directly by phone or in face-to-face conversations with their chief officers. Each was asked to respond to the information contained in Appendix G. Out of the 30 districts identified none had formally addressed rapid damage assessment in any format.

A request for information was posted in Oregon's Firebulletin bulletin board service (see Appendix G). No information was received from fire districts of similar size and makeup. Fire protection agencies did express an interest in the outcome (see Appendices I and J). While no agencies of similar size responded affirmatively, several affirmative responses were received from larger, more urban-oriented fire service providers that provided useful insights into the processes that must be completed.

*City of Newberg EOP Building Division Annex*

Chief Sherman, from Newberg Fire Department in Oregon, provided a very well organized package of procedures and forms (see Appendix M). Newberg's emergency operations plan places the responsibility for carrying out damage assessment in a Building Division Annex (see Appendix C). Because the Building Division of the City of Newberg is generally responsible for building inspection and building code application it is assumed that the division's employees are best suited for building damage assessment. The Building Official serves as the Damage Assessment Coordinator (DAC) and supervises the damage assessment teams. The process generally follows the guidelines established in the Applied Technology Council's (ATC) ATC-20 and ATC 20-1 Field manual of Disaster Assessment.

Among the assessment responsibilities assigned is rapid damage assessment. The main thrust of rapid damage assessment is to determine and document the scope of the damage caused by the incident, the condition of the city's infrastructure and the population's need for assistance. In the City of Newberg, rapid damage assessment is primarily carried out by conducting a comprehensive *windshield survey*. Data is documented using a simple form developed for organizing and gathering the data (see Appendix D). The city is divided into six sectors with team responsibilities assigned to each (see Appendix F).

Once rapid damage assessment is complete the DAC is responsible to dispatch inspection teams to carry out a comprehensive building-by-building assessment of all structures within the disaster area. The information generated by this process is summarized in an Initial Damage Assessment Report (see Appendix E).

#### *Canby Fire Response*

Canby Fire responded to the firebulletin request for information with a statement that they simply follow the ATC 20 as guidance for damage assessment during a disaster or other major emergency (see Appendix H). The ATC program is primarily concerned with structural damage.

#### *Sandy and Boring Fire District Response*

Alice Lasher, representing both Sandy and Boring Fire Districts, responded to the firebulletin request for information with a form developed from the Community Emergency response Team (CERT) manual (see Appendix K). The form is modified for increased effectiveness in transferring the collected data to the Operations Division for prompt emergency action. Ms. Lasher also suggested that since federal officials require estimates in dollars of damages and of the cost of response operations the section on the back of their form may be used

for those notations. She added that there is a list of reimbursable costs available from the federal government. The list proved quite helpful for her chief when completing the required response documentation.

***Research Question Four: What Criteria Should Be Used for a Rapid Assessment Plan for Mist-Birkenfeld RFPD?***

Because the resulting answers to this question are heavily dependant on material to be developed during discussion, this question will be summarized at the end of the discussion section.

## **Discussion**

### *Introduction*

Mist-Birkenfeld is a rural fire district with no incorporated cities within its boundaries. County and state resources are available during most emergency conditions but are generally located 20 to 35 miles away and across mountain passes. Because of these facts the access to resources that otherwise might be considered routine (police, county road department, state department of transportation, public works, health officials, building officials and so on) are likely to be unavailable or delayed during major emergencies. Additionally, disasters such as floods, earthquakes or volcanic activity, create conditions that make a timely response from these agencies impossible during a time when such resources are sorely needed. In many jurisdictions damage assessment would be assigned to another governmental agency or department (see Appendix C) with the fire district providing rapid assessment for their community during emergency response. However, in rural districts without direct local access to other agencies for assistance due to the conditions discussed above, rapid damage assessment must be planned,

staffed and carried out by the fire district if it is to be completed and documented in a timely and organized manner.

***Research Question Four: What Criteria Should be Used for a Rapid Damage Assessment Plan for Mist-Birkenfeld RFPD?***

The nationally recognized criteria for rapid damage assessment were found in both governmental and private sources. By far the most recognized governmental source was FEMA. Materials were also found from the State of Oregon, the State of Florida, the State of Nevada, and the City of Puyallup, Washington. Pertinent information from private organizations was obtained from the American Red Cross, the South Pacific Disaster Reduction Programme, Accella ERS, and the Applied Technology Council. The general criteria were similar for most of the programs. Many focused on determining structural damage and left life safety issues to others. It is not uncommon for urban areas to provide for life safety and health issues from a different governmental division than that used to complete structural damage assessment. Noted exceptions were the FEMA programs, South Pacific Disaster Reduction Programme, the State of Nevada, and the American Red Cross. All four of these organizations assessed both life safety and structural damage together. The State of Oregon delegates response and recovery operations to the local governments, providing financial support in various ways to responders both public and private. The concept of operations for Mist-Birkenfeld is that structural damage is only part of the picture, with life safety and public health and welfare being the larger part.

***Purpose.***

The purpose of rapid damage assessment is to quickly establish the scope of an incident, document the information gathered in an organized format, and transfer the data on to the EOC. There the information aids in planning, logistical preparation, and assignment of resources for

the response to mitigate the immediate effects of the disaster or major emergency (NFA, 2004). This format fits well with the needs of Mist-Birkenfeld RFPD. Our experience during the flood of 1996 showed we were very poorly organized to gain information from the flood stricken areas. Breakdown of the telephone system and the physical isolate resulting from cascade events (landslides, unstable bridges, debris fields and washouts) made communication very difficult for the first 48 hours.

In determining the scope of the incident, secondary threats (cascade effects) that result from the disaster must also be identified and reported along with the capability of the community to self-mitigate the effects of the disaster (Planitz, 1999, p. 2). It is important to recognize that without trained observers reporting on location an accurate picture of the local conditions may not be possible. During the 1996 flood disaster, information obtained by direct contact and by cell phone from residents as to the needs of the population tended to be overly confident in their ability to deal with the damages they sustained and overly optimistic in their ability to obtain the basic necessities during the recovery period. Mist-Birkenfeld RFPD personnel were not trained to be effective observers for the magnitude of this incident, and the information we gathered painted a much brighter picture than truly existed. We believe that trained observers who live in the sector will provide better information on the local conditions and needs due to their familiarity with the location and because they will be on location when no one else may be able to reach them.

Rapid damage assessment also quickly provides the foundation for disaster declarations and the state and federal aid that is triggered by such declarations (see Appendix B, p. 1). In our experience, again because of initial optimism, meaningful data was not generated until more than 48 hours had passed. A well-trained and organized rapid damage assessment program would

greatly improve the quality of the information and allow realistic planning to begin early for both response and recovery operations.

*Planning for Rapid Damage Assessment.*

Preparation for rapid damage assessment begins with *identifying the hazards* to the community posed by disasters or major emergencies. We may identify hazards and the community's vulnerability to the hazards by completing a Community Risk Assessment (NFA, 2004, p. SM 3-13). Planning and preparation then proceeds by addressing those hazards that have been identified as likely or possible. The community's capability to respond to the hazards is then assessed (NFA, 2004, p. SM 3-35). Once this process is complete it becomes clear what hazards are likely to occur and that rapid damage assessment must be ready to operate when they do.

The next step in preparing for rapid damage assessment operations is developing a community profile, as detailed beginning on p. 2 of Appendix B (see also Appendix F). This process creates a map identifying the target hazards of the area, the geographic features, identifies population concentrations, and key facilities. In Mist-Birkenfeld RFPD, for example, there are seven distinct population concentrations, generally conforming to small frontier settlements that were formed 70 to 80 years ago in geographically separated areas. Because these are rural communities and not formally organized cities there are relatively few target hazards. The only form of government located locally is the fire district.

Next it is necessary to divide or sector the area to be assessed, in this case the fire district, so that assessment can proceed in a comprehensive manner with no areas left unassessed. Using the profile map, the community is divided into sectors (sections that are geographically connected or that can be easily identified on a map as being logically connected) to which a team

will be assigned to carry out rapid damage assessment (see Appendix F). In the Mist Birkenfeld RFPD the sectors will conform to the seven geographically generated and still existing boundaries of the population concentrations. This process, while largely intuitive, provides necessary clarity to what the fire districts true priorities should be.

When hazards have been identified, vulnerabilities determined and response capabilities assessed, planning can proceed for the rapid damage assessment operations that must occur during the first few hours of the emergency (NFA, 2004, Chapter 1). Planning should include identifying and assembling those who will be directly or indirectly involved, building alliances, creating a preliminary plan, practical evaluation (usually during training exercises), identification of ways to improve the plan, adapting the plan to address needed improvements that have been identified, finalizing the plan, documenting the plan, then training to the plan. Planning is an all-encompassing process. The sequence of *train the personnel to the plan, evaluate the plan during a practical exercise, and adapt the plan to eliminate any shortcomings identified during the evaluation*, should be conducted on a regular basis to keep the plan in tune with current conditions (see Appendix B, p. 2). An example of a well-executed operational plan is contained in Appendix C.

#### *Rapid Damage Assessment Operations.*

Operations to be conducted to complete rapid damage assessment during a disaster include completing windshield surveys of the community, determining the status of essential facilities, determining the status of life-line services in the community, documenting the data collected, determining a process to pass the data to those who need to have it, and training the personnel who will carry out these functions.

One of the quickest ways to complete a rapid damage assessment survey is to do a *Windshield Survey*. A windshield survey is, by definition, a quick look at the sector to determine the extent of the damage and to determine where existing resources can be applied most effectively (OEM, 2004, p. I-2). In some cases, portions of the sector to be surveyed may require a walk through rather than a drive through due to inaccessibility. Some locations may be too dangerous to approach and should be assessed from a distance and reported immediately. The information that can reasonably be gathered is limited by the need to visit large numbers of locations in a short amount of time. It is also limited by impassable transportation routes and by the need to complete the process without getting bogged down or derailed by treating the injured or rescuing the trapped. However, in spite of the drawbacks, the windshield survey appears to be the best means of determining the conditions on a firsthand basis to determine what resources are needed and to prioritize responses effectively, especially in an urban setting.

The information gathered by a windshield survey should include at least the numbers of homes, apartment buildings, and businesses that are damaged, burning, or collapsed, their locations and the potential for additional damage to occur if not mitigated (see Appendix K). Hazardous conditions should be noted as well as the condition of transportation routes. Lifeline services should be evaluated, noting the locations of power lines down, gas leaks and broken water lines or mains. To the extent possible, estimate the number of injured, trapped or deceased people. Additionally, a description of the affected area and of the boundaries of the disaster should be included (OEM, 2004, p. I-2). The survey should be completed as quickly as is safely possible, summarizing the data by street or road and communicating it as soon as it is available. Target hazards should be assessed quickly and the data communicated immediately. When the windshield survey is completed for the sector and the data reported, the team returns to the areas



with the most life safety issues and begins to gather more detailed data and to provide life safety treatment for those who are injured. This process should be completed within an hour, two at the most. The fire district anticipates this process, like medical triage, to produce fast but very general information designed to provide the Incident Commander with the means to dispatch resources to the critical areas first.

*Completing the Data Collection.*

When the first level of triage is complete, efforts can be focused on the locations where serious injuries have been noted and where damage assessment information is otherwise incomplete. Because of the potential inability of emergency service responders to access the area immediately, it is important to provide the patients identified during the triage process with first aid care. At this point the rapid damage assessment team is in a treat and protect mode but is also gathering information specific to the location to be communicated to the EOC. First aid should be rendered to those who are in immediate need and the additional information communicated immediately. All survivors should be moved away from the danger area and sheltered where possible. The rapid damage assessment information resulting from this survey should augment the windshield survey information. It should include such information as numbers of deaths, injuries, and trapped persons, property damage estimates, hazardous conditions, condition of transportation routes, and determination if further damage is likely to occur (cascade events) the boundaries of the disaster, a description of the affected area, the status of life-line services in the community such as water, electricity gas, and sewer, and the locations where resources are urgently needed. In a less rural setting, the county building official might organize and train several teams of personnel to perform rapid damage assessment surveys and focus on structural safety (see Appendix C, Part 4). In more rural areas the task may fall to

emergency responders and other trained observers within the community. However, it must be remembered that during a major emergency staffing patterns and equipment resource needs are different from those experienced during normal operation. Because of this, procedures must include provision for these additional requirements (see Appendix B, p. 5).

*Essential Facility Status.*

The status of essential facilities is important to determine as quickly as possible. Effective deployment of resources is very difficult unless it is known that those resources are truly available. A process should be developed for each fire station, police station, hospital, public works facility, county road department facility, state department of transportation facility, emergency shelter, and emergency communications facility. Critical information regarding their operational status and strength must be accessed, using primary or backup communications means, establishing their ability to carry out their mission. Generally, the best means to assess essential facilities and the services they provide is direct communication by telephone or radio. (see Appendix B, p. 4)

*Status of Lifeline Services.*

The status of lifeline services is also important to determine. While many people may require relocation to an emergency shelter, many others may be able to safely stay in their homes, sheltering in place. For these people it is of critical importance to evaluate the availability of water, electricity, sewer, the condition of access routes, and perhaps natural gas. This process can be carried out using either the windshield survey or by direct communication with the source of the service. More information is better. (see Appendix B, p. 5)

*Communication of Data.*

The last task to complete the process of rapid damage assessment is to provide a means to gather, document and communicate the data to those who need it. Documentation is made easier when forms are available for both initial data recording. Standardization of forms eases the task of summarizing the results of the many initial reports being communicated. Several fire districts or departments who answered our request for information suggested using the ATC-20 Rapid Evaluation Safety Assessment form (ATC, 2005, ATC-20). This form is easy to use and provides ample opportunity to evaluate the condition of individual structures. However, it does not address life safety issues, status of lifeline services or the scope of the incident. The ATC forms are effective in an urban setting for city building officials tasked with rapid structural damage assessment. Conversely, in a rural setting the general lack of personnel and resources dictates that available rapid damage assessment teams, usually fire district based, are responsible for all rapid damage assessment data collection. Under these conditions, the ATC forms fail to assess the needs of a community attempting to respond to a disaster unless supplemented by other reports.

The windshield survey report form attached as Appendix D is easy to use but again focuses only on structural damage. This form does broaden the scope to include an entire sector or zone.

The damage assessment report form provided by Sandy and Boring Fire Districts (see Appendix K) is unique in that it provides an easy format for recording all of the required information identified for rapid damage assessment including incident scope on a single page. With multiple pages an entire sector could easily be assessed. It provides a trained observer the

ability to quickly gather all necessary data, allowing the sector to be assessed in a timely manner so that resources can be effectively dispatched. (see Appendix B, p. 6)

When the rapid damage assessment data is gathered together there may be hundreds of locations to report for each sector. An additional form, such as the form included in Appendix E will be helpful in summarizing the data gathered. An additional use for this document is to summarize the data gathered from each sector and to further summarize the results of the sector summaries. This action providing planners with a detailed picture where the most serious problems exist while also providing the overall damage assessment data in a format that can be used directly to access additional resources.

*Guidelines Establishing Operational Priorities are Critical.*

When emergency responders are used for rapid damage assessment, care must be exercised to provide clear guidelines as to the responder's priorities. The guidelines should be on paper and should be reviewed prior to assigning personnel to a sector. If patient care is to be the responder's first priority then, like triage, rapid damage assessment may never be completed. The danger in that scenario is that scarce and critical resources may commit themselves to tasks before the scope of the incident is known and critical patients or situations may not be discovered in time for effective intervention. This issue was introduced for discussion during the EAFSOEM class beginning on July 12, 2004. The variety of responses from class members ran the gamut between agreement that rapid damage assessment should be a priority during a disaster or major emergency to vehement rejection that trained emergency responders should be deflected in any form from their duty to provide direct assistance to the local community where and when they are needed. As discussion progressed, most classmates agreed that, like careful triage during a mass casualty incident, a quick but thorough rapid damage assessment may improve the

effectiveness of local responders and the efficiency of accessing needed resources quickly. When presented at an officers meeting at Mist-Birkenfeld RFPD the same emotionally driven differences appeared. It is clear that this discussion should take place in a controlled setting before an event occurs that may require the application of the process. All personnel must understand the need for and the benefits of rapid damage assessment.

Once a community profile is finished and tasks to be completed have been determined, necessary resources can be identified to carry out the rapid damage assessment process for each area.

*Determining Resources Needed to Conduct Rapid Damage Assessment.*

Determination of resources needed for conducting rapid damage assessment during a disaster event can be a complicated process. Personnel are certainly a needed resource. How many personnel are needed depends greatly on local population, sector size and availability of personnel to do the survey. Within the Mist-Birkenfeld RFPD available emergency response personnel are very limited. When rapid damage assessment survey completion in the field is a primary responsibility of emergency responders, assigning two responders to a team and one team to a sector would result in 14 field assignments for that purpose. However, during most disaster scenarios immediate access to the identified sectors is limited or not available. Past experience has shown that to get quick access to assessment information we must depend on communication with persons who live in the inaccessible sector. Since predicting which sectors will be affected or isolated is not possible we must develop, train and equip personnel living in each of the sectors to do rapid damage assessment surveys. The optimum number has been established at four persons per sector at Mist-Birkenfeld RFPD, to provide a team of two and a backup team of two. If these personnel are recruited from non- fire district emergency

responders, then at least 14 emergency responders can be reassigned to provide direct emergency services.

Personnel recruited for this purpose can be organized into CERT, Citizen Corps or even as a fire district auxiliary organization. Once trained and equipped with emergency communications equipment these groups should be able to provide assessment information on a continuous basis during most disaster scenarios. The program would require a minimum of 28 community members to represent the seven sectors discussed earlier. They will need transportation, rapid damage assessment documentation materials, and a means of reliable communications to complete their tasks in their assigned sector. (Appendix B, p. 5)

Personnel required for determining status of essential facilities will be internal administrative personnel of the fire district. The only essential facilities located within the bounds of the fire district are five fire district response stations. Each station will be assessed by arriving emergency response personnel and the information passed directly to the Headquarters Station for inclusion in the rapid damage assessment survey.

Lifeline services will be assessed in two ways. First, evaluation will occur during the initial rapid damage assessment surveys done by the CERT or Auxiliary team members in the individual sectors. Additionally, once essential facility assessment is complete, administrative personnel will begin the process of contacting the providers of electrical power, natural gas, and telephone service to determine the extent of known outages and establish an estimation of the time required to restore full service (Appendix II, p. 5 & 8). Normally water and sewer would be included in this list, but in our fire district, as in many rural districts, neither water nor sewer are provided by either governmental or private services.

Most of the additional resources will be needed by the CERT, Citizen Corps or Auxiliary teams and will be mostly focused on communications. The district will need to provide a minimum of seven portable radios capable of communicating on the regional communications network, along with chargers and extra batteries. The radios will be of a type that accepts AA alkaline batteries in a specially designed battery case. Large capacity first aid kits and AEDs will be provided to each team. The fire district will also reimburse cell phone bills when the phone is used for fire district business, and mileage for private vehicles used for fire district business.

### *Creating Alliances.*

Bringing together those that will have to work collaboratively during a disaster for preparation, planning and training creates an atmosphere of awareness during which alliances are born. Fire departments, districts or agencies will need to work closely with police agencies, emergency management officials, other fire agencies, public works, city or county officials, state and federal officials, to name only a few. Additionally, alliances formed ahead of time with private sector resources are of critical importance. Construction companies with heavy equipment and trained operators, hardware suppliers, sand and gravel vendors, repair shops, even commercial aircraft may be needed at a moment's notice. These alliances formed before the disaster occurs can make a significant difference in the time it takes to deliver services to the people who desperately need them.

In terms of rapid damage assessment, alliances can be especially important. Personnel are often difficult to find during a disaster, especially in rural areas. Because community interest groups have experience working together for common goals they can be a resource to provide large amounts of rapid damage assessment information. These associations, circles and clubs

may have members from many of the sectors identified during community profiling. Resources needed for these personnel vary according to the type of organization. Normally, transportation can be arranged within the group. Communications will need to be provided for most groups, though amateur radio groups such as ARES or RACES can provide more than adequate radio communications within the group. In either case, rapid damage assessment documentation materials will be necessary, along with the training required for their effective use. (OEM, 2004, p. I-2)

Additionally, community groups may be created and trained with rapid damage assessment as one of their tasks. Community Emergency Response Teams are an example of this option. Created with the assistance of the fire district, strong links can be forged with these community groups. Again, these groups must be trained and equipped to get the job done safely. (see Appendix B, p. 2 & 6)

A powerful ally during most disasters is the American Red Cross, especially during a predictable disaster. The American Red Cross (ARC) gathers much of the information needed for rapid damage assessment as a matter of form and may be relied upon to share their data under most circumstances. It is a good idea to meet with local members and to include them in planning activities. The training and dedication shown by ARC may provide the backbone of the resources needed to carry out the evaluation of local conditions required for effective rapid damage assessment. (American Red Cross, 2005)

Another possible way to use available personnel to greatest advantage is to provide better tools to get the job done. There are electronic recording devices and data storage services available from both ATC (ATC, 2005, ATC-20i) and Accella (City of Glendale, CA, p. 2) to make the process of large-scale damage assessment easier. These products are focused on



structural assessment and do not provide for the life safety and public health aspects of rapid damage assessment and are therefore of limited use to a rural fire district response. However, there is every possibility that this technology will be expanded to include life safety and health data.

*Creating a Standard Operating Guideline for Rapid Damage Assessment.*

When the planning is complete, guidelines must be created for carrying out rapid damage assessment activities (NFA, 2004, p. 5-9). The document should stipulate who the order for rapid damage assessment should come from, usually the Incident Commander. The SOG should address all the operational activities discussed above, clearly describing what actions are expected. The SOG should also clearly describe how the data is to be communicated once it is gathered at the sector level, who is to receive the data, and how it is to be summarized and communicated for use by the EOC. Radio communications channels should be listed for use as well as any other forms of communication that may be operational. Additionally, a clear statement of what is to be done if the team is called off of the assignment is of critical importance to ensure that the process of rapid damage assessment is completed in a timely manner. An example of such a SOG was created as a group exercise during the EAFSOEM class referenced above and is listed in Appendix M.

*Training.*

Training must be provided at several levels to those responding. Disaster awareness training should be designed based upon identified community risks and vulnerabilities and upon the community's ability to mitigate these conditions as identified in the district's EOP. This training must then be provided to all who are expected to respond, including district emergency response personnel, district non-emergency response personnel and those non-district personnel

organized to provide such services as rapid damage assessment through community-based CERT, Citizen Corps or Auxiliary teams. (see Appendix B, p. 6)

Rapid damage assessment training, based upon the Rapid Damage Assessment Annex to the District's EOP, must be provided to all of those who are expected to respond. Fire district emergency response personnel, district non-emergency response personnel and those non-district personnel organized to provide such services as rapid damage assessment through community based CERT, Citizen Corps or Auxiliary teams must receive training to do their assigned tasks safely and efficiently. Training in the effective use of the appropriate forms is of great importance, as well. It is important that every responder be aware of the critical information needed for an effective response and that they know how to communicate that information. (see Appendix C, Section B.1)

Training must also be provided to all responders regarding the recommended safety evaluations that are to be carried out on all district structures involved in floods, fires or earthquakes to determine their utility and their relative safety for human occupation. A copy of the ATC 20-1 Field Manual will be used as a primary guide and reference for the class.

Non-emergency response district personnel and CERT, Citizen Corps or Auxiliary Team members will receive training on the use and maintenance of the communications gear they are issued, regional emergency communications protocol, responder level first aid, and the use and the use of an automatic Electronic Defibrillator.

Each of the responder sub-groups must receive training specific to the tasks they are assigned, based upon the responsibilities detailed in the assignment description. Each assignment will have specific tasks to complete. Tasks and responsibilities will be detailed in a handbook

containing an outline of the fire district's rapid damage assessment survey process, a communications guide and an organizational chart. (NFA, 2004, Chapter 5)

Training in basic structural safety evaluation and communication of facility or service status must also be made available to those persons designated by a provider of a lifeline service. These important personnel will be judging the safety of the buildings used to provide those critical services and the ability of the service to continue operation following a disaster or major emergency event. Fire district personnel must be able to quickly interface with each lifeline service provider in the case of a disaster or major emergency. (OEM, p. I-1)

One final thought on training is that adding a formal certification to the training requirement may provide the opportunity to build company pride into the program. An additional benefit is that minimal recertification requirements can be built into the process. The recertification may be contingent upon a small number of continuing education hours, attendance at an annual program review, operational hours obtained during exercises, or a combination of these or other means of keeping the training fresh and up-to-date.

### Recommendations

The Mist-Birkenfeld RFPD is seeking to determine what criteria should be used to create a Rapid Damage Assessment Annex to our Emergency Operating Plan. Action Research has been conducted to select criteria that will apply appropriately to a rural community such as Mist-Birkenfeld. The following 10 criteria are recommended for used in creation of the Annex:

1. Hazards to and Vulnerabilities of the Community Must be Known and Understood.

The authority having jurisdiction (AHJ) must have a clear understanding of the hazards and vulnerabilities that exist for the jurisdiction. One way this can be accomplished is by conducting a Community Risk and Vulnerability Rating (see Appendix A).

2. The Ability of the Community to Help Itself During a Disaster Must Be Known.

The authority having jurisdiction (AHJ) must have a clear understanding of the community's response capability. One way this can be accomplished is by completing a Community Capability Rating (see Appendix A).

3. The Response Area Must be Divided into Manageable Parts to Facilitate Response.

Developing a Community Profile Map with logical operational sectors will assist with setting early priorities and organizing the response. This can be completed by carefully following the directions found on page 2 of Appendix B.

4. The Personnel Needed for Required Tasks Must be Known and Assigned.

Personnel needed to carry out rapid damage assessment operations must be identified, trained and preassigned. One way this information can be developed is by following the directions on page 5 of Appendix B.

5. Logistical Resources that May be Required Must be Identified, Located and Contracted.

Sources of food, water, fuel, supplies, building materials, tools, repair parts, and so on, must be arranged ahead of time and identified in the sources included in the planning document. Build alliances with private business and industry to access these needed resources before they are needed.

6. Response Partners Must be Identified and a Unified Response Team Created.

Form intergovernmental agreements or mutual response pacts with those public agencies who will have a mutual response role, or that may have resources that will be required during disaster or major emergency conditions. Include participation in planning and exercises as part of the agreement.

7. Complete a Plan Including Creation and Operation of Local Rapid Damage Assessment.

The following elements are considered the minimum elements required to be planned for:

- a. Recruiting, training and equipping of adequate numbers of community members in each sector to carry out rapid damage assessment activities and provide first aid assistance within each sector, and to interface directly with emergency responders as the responders arrive.
- b. Train and equip fire district emergency response personnel to evaluate their assigned stations, to communicate the resulting information to the Headquarters Station and to provide rapid damage assessment by performing a windshield survey of the parts of the fire district they have visited. When windshield survey operations for emergency responders are necessary set clear response priorities and provide a clear procedure for actions to be taken when responder is diverted to a higher priority situation.
- c. Assign, train and equip fire district non-emergency response personnel to collect information to determine status of essential facilities, to collect information as to status of lifeline services, and to receive rapid damage assessment information from each sector. Additionally, these personnel will summarize the information gathered at regular intervals and communicate the summaries as directed in the Rapid Damage Assessment SOG. Information regarding an immediate emergency condition will be communicated directly to the Incident Commander for assignment.
- d. Assure that appropriate forms are created for organization, recording and communication of rapid damage assessment data and that all personnel are trained to use the forms.

- e. Develop redundant emergency communications means and capabilities in every sector identified to ensure that every sector is able to communicate its needs reliably.
  - f. Develop redundant means of transportation for rapid assessment teams in each sector.
  - g. Create written procedures for all the above operations.
  - h. Determine a schedule to exercise and evaluate the plan on a regular basis.
  - i. Create a final plan document.
8. Train All Personnel to Know and Use the Rapid Damage Assessment Plan. One means of making the district's commitment to supporting the positions to be trained and the personnel who are to be trained is to create a certification for the position. Additionally, consider what continuing education or operational time might be required to keep the certifications.
9. Interface the Plan with All Response Partners and the County Emergency Manager. All local rapid damage assessment plans must be integrated into the EOPs of both Columbia and Clatsop Counties, and annexed for reference to the EOPs of allied response partners.
10. Exercise, Evaluate, Adapt, and Update the Plan Regularly. Plans that live on a shelf simply take up space. To be effective, a plan must be used during training exercises, evaluated for effectiveness, adapted to strengthen weaknesses identified, and updated as conditions in the response area change.

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## Appendices

### Appendix A: Rating Risk: Step 1 – “Hazard Identification”

COMMUNITY RISK ASSESSMENT/CAPABILITY ASSESSMENT				
	Could this hazard affect your jurisdiction?	Is this hazard a significant threat to your jurisdiction?	About how often does this hazard occur in your jurisdiction?	What is your best estimate of the total population that could be affected seriously by this hazard?
<b>NATURAL HAZARDS</b>				
Avalanche				
Drought				
Earthquake				
Flood				
Hurricane/Tropical storm				
Landshift/Erosion/Earthslide				
Tornado				
Tsunami				
Volcano				
Wildfire				
Winter storm (severe)				
Epidemic				
High wind				
<b>TECHNOLOGICAL</b>				
Civil Disorder				
Dam Failure				
Haz Mat (stationary)				
Haz Mat (transportation)				
Nuclear Facility				
Power Failure				
Subsidence				
Transportation Accident				
Urban Fire/Conflagration				
Air Disaster				
Rail Disaster				
Other				
<b>NATIONAL SECURITY HAZARD</b>				
Attack				
- Conventional				
- Nuclear				
- Chemical/Biological				
- Sabotage				
Terrorism				
- Nuclear				
- Chemical/Biological				
- Public Utility Disruption/Contamination				
<b>TARGET HAZARDS</b>				
Agricultural hazard areas				
- Blight				
- Infestation				
- Severe weather				
Arsenals				
- Armories, storage centers				
- Military manufacturing centers				
Civil disorder-prone areas				
- Campuses				
- Prisons				
- Special population concentrations				
- Terrorist targets				

**Figure 3-2**  
**Comprehensive FEMA Hazard List**

## Appendix A: Rating Risk: Step 2 – “Hazard Risk Assessment”

<b>Matrix 1--Hazard Identification</b>		
<b>List 20 hazards.</b>	<b>What is the probability this an event will occur at this hazard?</b>	<b>What is your best estimate of the total population that could be affected seriously by this hazard? Consider peak population if appropriate.</b>
1.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
2.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
3.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
4.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
5.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
6.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
7.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
8.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
9.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
10.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number
11.	1. ρ unlikely 2. ρ possible 3. ρ likely	_____ Enter a number

## Appendix A: Rating Risk: Step 3 – “Vulnerability Assessment”

Matrix 2--Vulnerability Assessment					
List hazards.					
HAZARDS	1	2	3	4	5
<b>Impact Rating</b>					
<b>Danger/Destruction</b> (High=3; Moderate=2; Low=1)					
<b>Economic</b> (Permanent=3; Temporary=2; Immediate short term=1)					
<b>Environmental</b> (High=3; Moderate=2; Low=1)					
<b>Social</b> (High=3; Moderate=2; Low=1)					
<b>Political Planning Level</b> (Local=1; Regional=2; Federal=3)					
<b>Total Vulnerability Rating</b> (Sum of all factors)					
<b>RANK</b>					
5 to 8 LOW					
9 to 11 MODERATE					
12 to 15 HIGH					

## Appendix A: Rating Risk: Step 4 – “Composite Risk Rating”

Matrix 3--Risk Rating							
List hazards.							
	Probability of Occurrence			Vulnerability			Risk
25 Hazards	Likely (3)	Possible (2)	Unlikely (1)	High (3)	Moderate (2)	Low (1)	Rating (probability x vulnerability)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

## Appendix A: Determining Response Needs – “Risk/Capability Assessment Form”

Name/ Location/ (in order of risk rating)	Symbol/ Color	Protective Action Issues	Special Resource Requirements	EOC Unmet Needs
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

## Appendix B: Rapid Damage Assessment Student Manual Class Handout

**RAPID DAMAGE ASSESSMENT STUDENT MANUAL****DEFINITION**

Local situational (**Rapid**) **ASSESSMENT** includes all **Immediate Response** activities that are directly linked to initial **Assessment Operations** in order to specifically determine lifesaving and life sustaining needs.

**WHY IS RAPID ASSESSMENT IMPORTANT?**

The ability of local governments to perform a **Rapid Assessment** accurately and within the first few hours after an incident is critical to providing an adequate **Local Government Response** for life-threatening situations and imminent hazards. Coordinated and timely **Assessments** permit **Local Governments** to prioritize response activities, allocate scarce resources, and request mutual aid and State and Federal assistance quickly and accurately.

**Rapid Assessment Involves:**

- **Developing Rapid Assessment plans and procedures.**
- **Testing, Evaluating, and Finalizing the plan.**

When communities have warning of an impending event, Local, State, and Federal **Assessment** teams pre-deploy and work together to conduct situation **Assessment**. For events that occur without warning (e.g., earthquakes), **Rapid Assessment** must be conducted, at least initially, with local resources only. In any event, **Rapid Assessment** information lays the foundation for determining immediate response efforts.

**Note:** **Assessment** is accomplished in three phases:

- **Rapid Assessment** takes place within hours after an incident and focuses on life-saving needs, imminent hazards, and critical lifelines.
- \* **Preliminary Damage Assessment (PDA)** identifies and affixes a dollar amount of damage.
- : **Combined Verification (CV)** includes a detailed inspection of damage to individual sites by specialized personnel.

## Appendix B: Rapid Damage Assessment Student Manual (Continued)

### WHO IS INVOLVED IN RAPID ASSESSMENT

**Rapid Assessment Involves Teamwork** among local public and private personnel. Depending on the time of the incident and the amount of warning, it may initially include personnel from law enforcement, fire, public works agencies and other resources included in your community's procedures. Immediately (i.e., in the instant), personnel who are in place and know their responsibilities are the front-line teams for **Rapid Assessment**. Later **Rapid Assessment** operations may include other government organizations, volunteer organizations, key persons from business and industry, and private citizens.

The **Rapid Assessment** process must have a leader. He or she may be the **Emergency Manager (EM)** or someone on the **EM's** staff who has been assigned to manage and report the data, and prepare

.documentation necessary for continuing response operations.

### DEVELOPING RAPID ASSESSMENT PROCEDURES

Your community's first task involves **Developing Rapid Assessment Procedures**. These procedures will provide guidance to all agencies involved in **Rapid Assessment** and will be incorporated in the community's **EOP**. The recommended steps for **Developing Rapid Assessment Procedures** include:

- **Developing** a community profile.
- **Sectoring** the community.
- **Performing** a **Risk Assessment** by sector.
- **Determining** staffing patterns and resource requirement.
- **Developing** communication **Procedures**.
- **Exercising** and **Evaluating** the **Procedures**.

Each of these steps is described in the sections that follow, to help you make decisions that are important to developing your community's **Rapid Assessment Capability**.

### Developing A Community Profile And Sectoring The Community

**Developing A Community Profile** is an essential early step in the planning process. The **Community Profile** allows you to determine the hazards and risks your **Community** may face as a whole in particular areas. A **Community Profile** is a map of a community that:

- **Identifies** the location of **Major Structures** and **Geographic Features**.
- **Pinpoints Disaster** intelligence targets that your **Community** must assess immediately such as **Population Concentration** and the location of **Key Facilities**.
- Takes into account manmade and natural boundaries for **Sectoring** your **Community**.
- **Identifies** staffing patterns for 24 hour responders and time - of - day shifts for school and work populations who will be sources for disaster intelligence.

## Appendix B: Rapid Damage Assessment Student Manual (Continued)

Some communities may already have an established **Community Profile**. If this is the case, the planning team should review the existing Profile to ensure that it is up-to-date and suitable for **Rapid Assessment**.

A Community **Profile** for **Rapid Assessment** includes:

- **Major Geographic Features** that may impact **Rapid Assessment** efforts. These include mountains, rivers, or any other geographic features that could impede the movement of **Rapid Assessment** personnel and / or impact response procedures.
- **The Location of Population Concentrations**, including populations with special needs. Special - needs populations include groups - such as the elderly, infirm, school children, and Non-English-speaking persons - that may need assistance in evading dangerous or potentially dangerous situations.
- **The Location of Essential Facilities**. **Essential Facilities** are facilities that are essential in emergencies, such as fire and police stations, medical facilities, utility substations, lifelines and shelters.
- **The Location of Other Resources** (for example, equipment yards). Plot the **Locations** of Resources not normally used in a **Rapid Assessment** effort but that may be used for response activities.
- **Major Transportation Routes**. These are **Routes** that would play a critical role when moving people and equipment.
- **Time - of - Day** and **Time --of - Year Population Shifts**. **Shifts** occur each day and throughout the year as a result of daily and seasonal routines. As schools and businesses close each day, populations shift from commercial and business districts and schools to residential areas and parks. Summer is associated with seasonal shifts: schools close, activity increases at recreation centers and parks, and people go on vacations. Knowledge of these daily and seasonal population shifts allows **Assessment Personnel** to plan efficient collection of essential disaster intelligence.
- **Hazard Type** (warning versus sudden impact). **Hazards** such as tornadoes are unpredictable because they strike suddenly and without warning. Other **Hazards** are predictable. That is, communities can prepare for the **Hazards** if conditions that typically precede these **Hazards** exist.

**Normal Discipline Deployment for Responding Agencies**. **Normal Discipline Deployment** refers to the number and type of public servants who are normally on duty at a given time and location.



## Appendix B: Rapid Damage Assessment Student Manual (Continued)

**SECTORING THE COMMUNITY**

Dividing the **Community** into **Sectors** that are the same for all **Responding Agencies** is an **Essential** starting point after developing a **Community Profile**. In the event that the **Rapid Assessment** procedures are activated, these **Sectors** will take precedence over other **Agency-Specific Sectoring Methods**. **Sectors** serve as "Addresses" for tracking and allocating **Assessment Personnel** and **Collecting and Reporting Data**. They also provide a means of describing the locations of **Special response** concerns, such as geographical impediments and populations with special needs.

**Points** to remember when **Developing Sectors** include:

- Is the size of each **Sector Manageable**?
- Are **Assessment Targets** and the **Location** of possible **Assessment Resources** reasonable for the **Sectors**?
- Have geographic and manmade features that may prevent entry into Sectors been taken into account?

**PERFORMING A RISK ASSESSMENT BY SECTOR**

After developing a **Community Profile**, your next step will be to review the profile to analyze the risks inherent in each **Sector**. **Risk** is the predicted impact that a hazard would have on a specific target (e.g., if the target is a bridge and the predicted impact is a collapse, an outcome might be restricted access to a critical facility). **Emergency Services** and other **Rapid Assessment Personnel** should survey each **Sector** to develop a composite picture of risks related to:

- **Population Densities and Demographics.**
- **Essential Facilities** (facilities that are **Essential** in **Emergencies**):
- **Police stations.**
- **Fire stations.**
- **Shelters.**
- **Type of Construction.**
- **Hazardous Materials storage and/or transport.**
- **Land use.**
- **Soil composition.**
- **Topography.**
- **Special Facilities** (facilities that house populations with **Special needs**):
- **Schools.**
- **Nursing homes.**

**Health - care facilities.**

## Appendix B: Rapid Damage Assessment Student Manual (Continued)

- **Lifelines** (aspects of a **Community** that enhance the quality of life or are required for survival):

- **Electricity.**
- **Gas.**
- **Sewer.**
- **Water.**
- **Roads.**

- **AVAILABILITY OF RESPONSE RESOURCES**

When completing the **Rapid Assessment**, consider population shifts and other factors that could affect **Rapid Assessment priorities** based on the time of day, the time of year, and general weather conditions.

As part of considering **Risks, Sectors, Resources, and Access Routes**, procedures should indicate **Assessment** priorities for collecting disaster intelligence. What intelligence must be gathered first (e.g., the condition of schools to be used as **Shelters, Hospitals, Access Routes, Fire Stations, etc.**)?

- **Priority 1: Essential Facilities** (because law **Enforcement Personnel, Firefighter, Shelter, Hospitals, etc.**, cannot respond if their own **Facilities** and **Equipment** are damaged).
- **Priority 2: Life Safety** (including **Hazard areas, High-Risk Populations, and Potential Search and Rescue Situations**).
- **Priority 3: Lifelines (Utilities, Communication, and Transportation Systems).**

**DETERMINING STAFFING PATTERNS AND RESOURCE REQUIREMENTS**

After completing **Community Profile** and analyzing **Risks** within each **Sector**, it will be necessary to **Determine Staffing Patterns** and **Personnel** and **Equipment Resources** separately from normal deployment to meet the special requirements of **Local Rapid Assessment** by identifying who will have the responsibility to collect and report disaster intelligence on the **Risks** identified in the **Sector**.

- **Rapid Assessment Personnel. Personnel** who are assigned specifically to gather **Rapid Assessment Data** in their Sector following an event.
- **Police, Fire, and Public Works Personnel. Personnel** who operate in each Sector on a 24-hour-per-day basis (e.g., **Fire, law enforcement**) and who could begin **Rapid Assessment** immediately following a sudden onset event.

## Appendix B: Rapid Damage Assessment Student Manual (Continued)

- **Non-Response Personnel. Individuals** who can provide **Rapid Assessment** information on **Essential Facilities** in each Sector without draining **Professional Response Resources** (e.g., **School personnel, Utility personnel, Hospital and Nursing Home personnel, etc.**).  
**Note:** These individuals should be pre-identified in the **Rapid Assessment** procedures.

**Community Groups.** Citizens who have been trained to be part of **Response Activities** (e.g., **Community Emergency Response Teams, RACES Operators, etc.**).

- **Re-callable Personnel. Additional Personnel** who may have to be assigned **Rapid Assessment** duties in each Sector to supplement work performed by the above personnel (i.e., **if Disaster Intelligence** is not reported within a **specified time-frame, then Recalled Personnel** can be assigned to collect the missing **information**).

**ESTABLISHING A METHOD FOR COMMUNICATING DAMAGE INFORMATION**

The next step in the **Planning** Process deals with how **Rapid Assessment** information that is collected in the field will be communicated to a **Central Collection Point** for **Processing** and **Reporting**. This step is critical to the **Rapid Assessment** due to the amount of data that potentially will be **Transmitted** and the general urgency of the situation. When completed, the **Communication Plan** will serve as a **Blueprint** of the path that information will travel from the Sectors to the EOC and back. As a minimum, the path should include **Transmittal Processes** for the following sources of **Disaster Intelligence**:

- **Dispatch Centers, 911, and Rapid Assessment Team Leaders.** Receive information from **Field Units** and Forces, **Rapid Assessment Teams**, and **Citizens**, and transmit it to the next level.
- **Command Post(s).** Exchange information with the **EOC**.
- **The EOC.** The EOC is the **Rapid Assessment** control point. It is destination for all information in the **Rapid Assessment Communication** network. **EOC Personnel** compile and analyze this information on a regular basis to recommend **Resource** needs and additional **Response** requirements to **Decision-makers**.

Because it is possible that normal **Communications** will be disrupted immediately after an event, you should consider both primary and secondary **Communication Methods**. Decisions at this point include:

- **The Communication Mechanism** (e.g., **Radio, Cellular Telephone, or Hand Delivery**).
- **Communication Protocols.**
- **The Type(s) of Disaster Intelligence** that must be **Communicated** immediately versus lower priority information that must be recorded but reported at a later time.

## Appendix B: Rapid Damage Assessment Student Manual (Continued)

Use the **EOC Communication Method** that is in place, modifying it only as necessary to **Receive, Compile, and Transmit Rapid Assessment Data**. Then focus on a **Mechanism** to handle all other **Transmissions**. Your **Community's Communication Method** for **Rapid Assessment Data** should address all **Potential Information Sources** that apply.

A **Communication Profile** provides two-way information- it indicates the way the **EOC Personnel** should contact **Collection Points** or the **Assessors**.

Your **Community's EOP** includes a call-up sheet for **Key Personnel**, but the call-up sheet may not include **Key Personnel** for **Rapid Assessment** who must be notified immediately after an event.

### COLLECTING AND ORGANIZING DATA

After establishing a **Communication Mechanism** and **Disaster Intelligence Priorities**, your next step is to develop the forms required to gather the **Data** in the Field and at **Data Collection Points**:

- **Rapid Assessment Personnel.**
- **Police, Fire, and Public Works Personnel.**
- **Non-Response Personnel.**
- **Community Groups.**
- **Re-callable Personnel.**

When completed, these forms should provide an initial picture of the **Life-saving** needs, the condition of **Critical Facilities**, and **Imminent Hazards** in each Sector and for the entire **Community**. As a minimum, this task requires **Developing**:

- **Rapid Assessment Form(s).**
- **Data Collection Form(s)** for **dispatch centers, 911, etc.**
- **EOC Data Collection Form(s).**

#### Developing Rapid Assessment Forms

**Developing Rapid Assessment Forms** involves developing the **Check-list(s)** that **Rapid Assessment Personnel** deployed to predetermined **Assessment Targets** will use as they collect **Disaster Intelligence** at the **Locations** and **Facilities Identified** in the procedures. The **Check list** is critical to overall **Rapid Assessment Operations** because it will ensure that all **Collectors** evaluate their **Predetermined Target**, gather the same Types of information, and Report in the same way. This Check-list will also form the basis for **Forms** that **Collectors** at **Dispatch Units** use to record the **Data**.

## Appendix B: Rapid Damage Assessment Student Manual (Continued)

The major categories of information must include the following:

### **Life Safety Information:**

- **Search and Rescue** (how many trapped, where, and how).
- **Deaths and Injuries.**
- **Evacuation** (need and status).

**Status of Life-lines.** Life-lines include:

- **Electric.**
- **Gas.**
- **Water.**
- **Transportation Systems.**

**Status of Essential Facilities.** Essential facilities include:

- **Police Stations.**
- **Fire Stations.**
- Shelters
- Hospitals.
- Communication System.

Additional Considerations.

- Status of Imminent Hazards.
- Status of Access Routes.
- **Descriptions of Major Problems (by Sector).**
- **Status of Resource Utilization and Requests for Assistance.**

Your **Community** may need other information as well. Remember, however, that too much information will increase the difficulty of **Recording, Compiling, and Reporting The Data.**

**Note:** The EOC must have information on hand to complement the **Disaster Intelligence** received ( i.e., when the electricity shuts down, **EOC Personnel** should have predetermined what type of generator the hospital needs.

### **Developing Forms For Dispatch Centers, 911, Etc.**

After **Developing** the **Rapid Assessment Form(s)**, the next step is to **Develop** the **Collection Form(s)** that **Dispatchers** or other **Initial Data Recorders** will use to record. information as it is reported form the **Field Units.**

### **Developing EOC Data Collection Forms**

The next step is to **Develop** the **Forms** for **Recording Data** at the **EOC Forms** will be used as the basis for making decisions about **Prioritization, Resource Allocation, Reporting, and Requesting Additional Assistance.**

## Appendix C: City of Newberg Building Division Annex

## **City of Newberg Building Division Annex**

### **I. PURPOSE**

The purpose of this annex is to ensure public safety, health, and welfare during a declared emergency by receiving, assessing, and recording damage information resulting from a disaster or other major emergency incident in the City.

### **II. SITUATION AND ASSUMPTIONS**

#### **A. Situation**

Several hazardous conditions exist within the City of Newberg which have the potential of causing loss of lives, inflicting injuries, or causing extensive property damage.

#### **B. Assumptions**

During an emergency, damage reports are received from damage inspection teams, emergency service units, other City departments, and various government agencies. Damages are assessed, assimilated, and reported to the Incident Commander and other Emergency Operations Center (EOC) sections. It is assumed that the need for coordination of Building Division activities with other emergency program services is a critical issue that will be addressed.

### **III. CONCEPT OF OPERATIONS**

#### **A. General**

1. The City Manager, Mayor, or Governor has declared a state of emergency.
2. The EOC has been activated.
3. The Building Official, who shall serve as the Damage Assessment Coordinator (DAC), requests members of the Damage Assessment Teams to report for duty.
4. The DAC will brief assembled damage report personnel on the situation, assignments, and other operating information necessary to conduct a rapid

damage assessment of all buildings in a specified area, using a **Windshield Survey Form**, found in **Appendix 3**.

5. Damage reporting shall be received, assessed, assimilated, and reported to the DAC.
6. During the rapid assessment period, the inspection teams shall make cursory inspections of buildings to determine the severity and scope of the disaster, and shall report all such information to the DAC as rapidly as possible.
7. Following the rapid assessment period, the DAC shall assemble and instruct inspection teams to conduct a prioritized comprehensive structure-by-structure inspection of all buildings within the disaster-affected area(s), appropriately posting heavily damaged buildings. This effort will result in a **Damage Assessment Report** found in **Appendix 4**.
8. Some buildings or structures may require further engineering evaluation, to be performed by a consultant hired by the owner.
9. Overall assessment practices will follow the procedures of the Applied Technology Council's ATC 20 and the ATC 20-1 Field Manual of Disaster Assessment. The Building Official shall maintain a list of active ATC20 personnel and shall present same to the EOC on request.

## B. Phases of Emergency Management

### 1. Mitigation

- a. Work closely with City departments and commissions in ensuring orderly and safety-conscious development and growth in the City of Newberg;
- b. Ensure that Building staff are regularly trained and knowledgeable in building/development codes and hazards identification;
- c. Ensure that staff is familiar with specific hazard areas within the City;
- d. Ensure that all Division staff participate in the ongoing review of the City's disaster plan; and
- e. Create and participate in mutual aid agreements.

### 2. Preparedness

- a. Develop and maintain standard operating guidelines that provide the necessary guidelines for efficient and effective responses to all identified hazards;

- b. Develop call-out procedures for all Division personnel and contract personnel;
- c. Develop training activities for all personnel;
- d. Develop and maintain two Assessment Packages, one located in City Hall and a second located at the Public Works Shop; and
- e. Review and maintain mutual aid agreements.

### 3. Response

The Response procedures are as outlined below in Section IV.

### 4. Recovery

During the Recovery phase, the Building Division will assist other City departments, as directed by the Incident Commander.

## **IV. ORGANIZATION AND RESPONSIBILITY**

- A. The Building Official (BO) shall serve as Damage Assessment Coordinator (DAC).

1. Unavailability of the BO or acting BO shall cause any one of the following to serve as DAC, as the Incident Commander directs:
  - a. Any A-level Commercial Inspectors;
  - b. Any A-level Plans Examiners; and
  - c. Other qualified officials
2. The DAC shall provide adequate staff to report, assess, and record damage and other disaster problems. Staff needs shall be assessed based on the level of need (those levels are outlined below):
  - a. Level 1 – widespread structural devastation of buildings; 90% or more
  - b. Level 2 – widespread devastation of buildings; 70-90%
  - c. Level 3 – Moderate damage to most buildings; some buildings are completely lost; large, spreading structural fires
  - d. Level 4 – moderate damage to all affected buildings; large structural fires
  - e. Level 5 – minor damage to any affected building(s); moderate structural fire(s)
3. The DAC may request an assistant and support staff to process damage reporting and to provide other support services. The assistant may manage the damage report processing and support staff under the direction of the DAC.



4. The DAC shall organize damage inspection teams for the initial assessment effort. The teams shall consist of one or more field survey teams and adequate office support staff. Teams will locate, designate (and post), document, and report any obviously unsafe buildings.
5. The DAC shall organize detailed damage inspection teams and adequate office support following the rapid damage assessment period. The detailed damage inspection teams shall commence a prioritized structure-by-structure inspection to determine hazards and damage within the disaster-affected area.

## V. DIRECTION AND CONTROL

### A. Operations Location

1. The initial reporting location for damage assessment personnel will be at the City of Newberg Fire Department at Second and Howard Streets.
2. The inspection teams from each City zone, and other personnel will be advised of any alternate reporting locations by the DAC. (see **Appendix 5** for identification of inspection zones within the City.)

### B. Notification to Report

1. Personnel may be requested to report to the EOC or other specified locations by any of the following methods:
  - a. Telephone;
  - b. Commercial radio and television;
  - c. Personal pager; and/or
  - d. In person.
2. Notification should include any of the following information:
  - a. Reporting time;
  - b. Location;
  - c. Shift duration;
  - d. City vehicle availability and location;
  - e. Personal equipment or tools required;
  - f. Provisions for food;
  - g. Traffic detours and suggested routes; and
  - h. Parking requirements.
3. Initial Staff Briefing

The DAC or his/her assistant shall brief assembled staff regarding the following information:

- a. Assigned work location, responsibility, and shift duration;
- b. Transportation assignments and routing;
- c. Reporting forms and distribution to staff;
- d. Available communication systems to be used;
- e. Descriptions of known status of areas to be inspected;
- f. Hazardous situations likely to be encountered;
- g. Where to obtain fuel for City vehicles;
- h. Location to which City vehicles will be returned after shift; and
- i. Compensation for use of private vehicles.

## **VI. CONTINUITY OF GOVERNMENT**

Lines of succession for the Building Division will be in accordance with the standard operating guidelines established by the Community Development Department.

## **VII. ANNEX DEVELOPMENT AND MAINTENANCE**

The City of Newberg Building Official will ensure the maintenance of all components of this annex, to include reports, records, standing operating guidelines, and associated correspondence files.

## **VIII. APPENDICES TO THE BUILDING DIVISION ANNEX**

Appendix 1  
Appendix 2  
Appendix 3  
Appendix 4  
Appendix 5

Resource List  
Building Division Call List  
Windshield Survey Form  
Damage Assessment Report  
City Inspection Zones Map

Appendix D: City of Newberg Windshield Survey Form

City of Newberg  
Building Annex

Appendix 3

Damage Assessment – Windshield Survey

City of Newberg

Event: \_\_\_\_\_ Date: \_\_\_\_\_

Zone: \_\_\_\_\_ Street Name: \_\_\_\_\_

Area Boundaries: North: \_\_\_\_\_ South: \_\_\_\_\_  
Street Name Street Name  
East: \_\_\_\_\_ West: \_\_\_\_\_  
Street Name Street Name

Surveyed By: \_\_\_\_\_ Title: \_\_\_\_\_ Phone: \_\_\_\_\_

	Single Family Dwellings	Mobile Homes	Apartments	Businesses	Total
D E S T R O Y E D*					
M A J O R*					
M I N O R*					

Use a hash mark for each item; group with a fifth diagonal mark to indicate the fifth of five dwellings, mobile homes, apartments, or businesses counted.

\* Percentage of damage ranges are: 80% = DESTROYED; 30-79% = MAJOR; 5-29% = MINOR DAMAGE.

## Appendix E: City of Newberg Initial Damage Assessment Report

**City of Newberg****Building Division Annex****Appendix 4****Initial Damage Assessment Report - Page 1**

Reporting Location: \_\_\_\_\_ Date and Time: \_\_\_\_\_

Area Affected: \_\_\_\_\_

Cause of Damage: \_\_\_\_\_  
(flood, windstorm, earthquake, etc.)

Persons (insert number in space provided):

A. Killed	_____	B. Injured	_____	C. Sick	_____
D. Displaced	_____	E. Missing	_____	F. Hospitalized	_____

Damage to essential facilities (indicate capability lost and estimated dollar loss)

A. Hospital	%	\$	D. Railroad	%	\$
B. Food Availability	%	\$	E. _____	%	\$
C. Communications	%	\$	F. _____	%	\$

Damage to Public Property

A. Roads	%	\$	E. Sewage Plant	%	\$
B. Bridges	%	\$	F. Disribut. Lines	%	\$
C. Schools	%	\$	G. _____	%	\$
D. Water Treatment	%	\$	H. _____	%	\$

Damage to Private Property

A. Dwelling Units	%	\$	C. Farms/Ranches	%	\$
B. Comm. Buildings	%	\$	D. Livestock	%	\$

Are there large accumulations of debris? Yes \_\_\_\_\_ No \_\_\_\_\_ (If yes, explain in remarks)

Is the reporting government intact enough to fulfill its governing functions? Yes \_\_\_\_\_ No \_\_\_\_\_

## City of Newberg

### Building Division Annex

### Appendix 4

### Initial Damage Assessment Report - Page 2

Dollar amount of reporting government resources which have been committed to alleviating damage, loss, hardship, or suffering.

	PERSONNEL	MATERIALS	EQUIPMENT
Emergency Services	_____	_____	_____
Road Bridges	_____	_____	_____
Law Enforcement	_____	_____	_____
Fire & Rescue	_____	_____	_____
Other Services	_____	_____	_____
Contract Services	_____	_____	_____
Sub-Total	\$ _____	\$ _____	\$ _____
<b>TOTAL RESOURCES</b>	\$ _____		

Assistance required to cope with the disaster or emergency (check [Y] requirement)

PUBLIC NEEDS	WATER SUPPLY	FLOOD FIGHTING
_____ Restore Power	_____ Drinking	_____ Dike Building
_____ Communications	_____ San. Sewers	_____ Sandbagging
_____ Transportation	_____ Fire Fighting	_____ Pumps
_____ Secure Area	_____ Other (Specify)	_____ Other (Specify)
_____ Debris Clearance	_____	_____

VICTIM NEEDS	ADMINISTRATION
_____ Search & Rescue	_____ Activate EOC
_____ Evacuation	_____ Public Announcements
_____ Food	_____ Maps Available for:
_____ Shelter	_____ General Disaster Area
_____ Clothing	_____ Specific Damage Sites
_____ Medical	_____ Location of EOC,DAC
_____ Other (Specify)	_____ Other

(Explain items checked in remarks)

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City of Newberg

Building Division Annex

Appendix 4

Initial Damage Assessment Report - Page 3

Location of Emergency Operations Center (EOC) \_\_\_\_\_

Telephone Number of EOC \_\_\_\_\_

Other Communications \_\_\_\_\_

Amount of local government funding available and expected to be appropriated to meet the needs of this disaster:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Remarks  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and Title of Person Filing Report \_\_\_\_\_

Date and Time \_\_\_\_\_

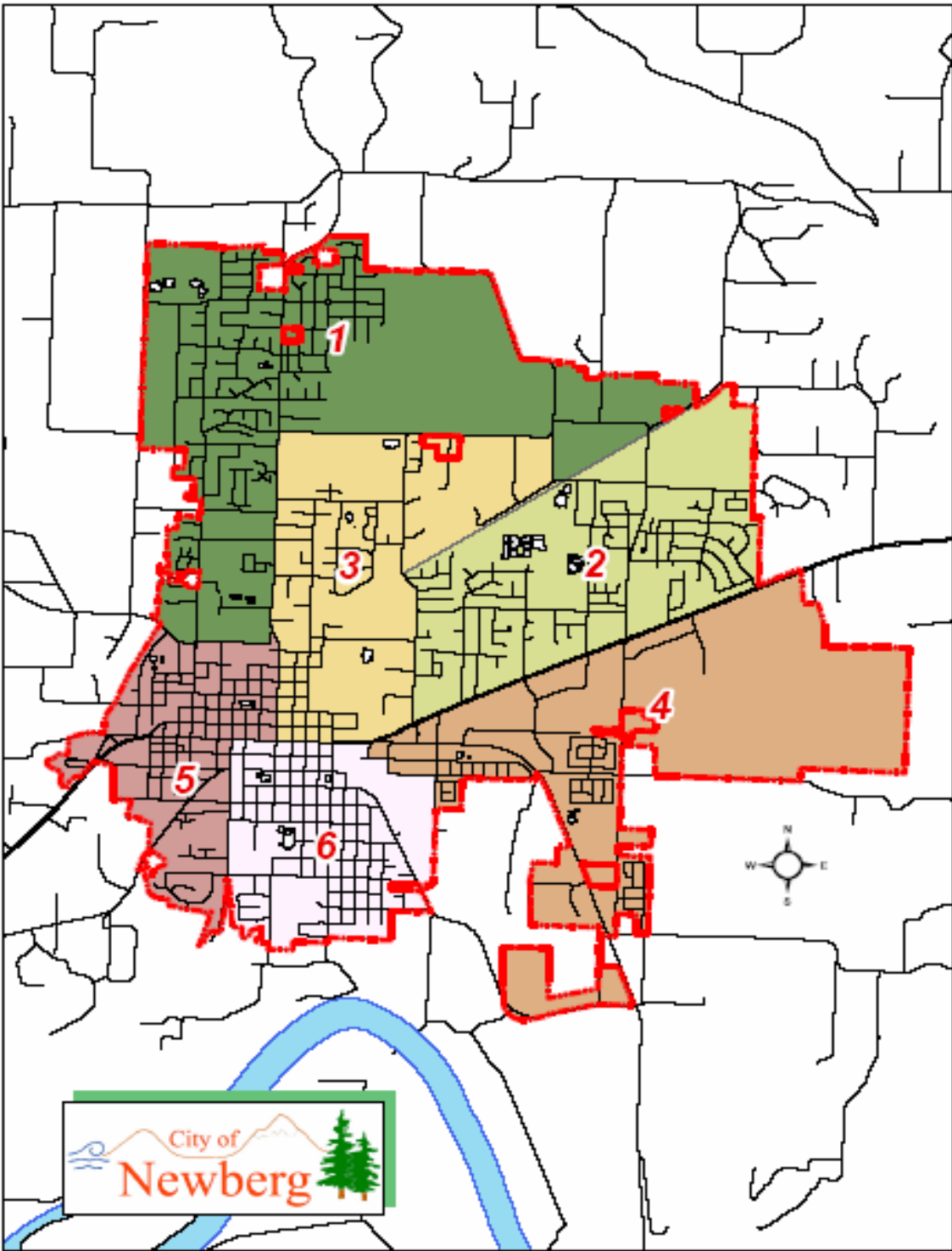
Appendix F: City of Newberg Inspection Zone Map

City of Newberg

Building Division Annex

Appendix 5

City Inspection Zones



## Appendix G: Posting on the Oregon Firebulletin Network

Yahoo! Mail - crawford df@[yahoo.com](mailto:df@yahoo.com)  
1 of 1

Page

**Date:** Mon, 07 Feb 2005 07:21:26 -0800  
**From:** "Thelma Denney" <[Thelma.Denney@state.or.us](mailto:Thelma.Denney@state.or.us)> c View Contact

**Details To:** firebulletin@oregonvos.net

**Subject:** firebulletin Request for information

I am developing a rapid damage assessment process to be added to our disaster plan. Does any fire district or department out there include rapid damage assessment either as a part of a disaster or all hazards plan? If not, does anyone have a stand-alone rapid damage assessment plan that they use? If you do I would like to look at it with the intent to incorporate portions into our own plan, with your permission.

My E-mail is crawford [df@yahoo.com](mailto:df@yahoo.com). If you wish you can sent the information by attaching it as a file. You can contact me directly at

Mist-Birkenfeld  
RFPD, 12525 Hwy  
202, Mist,  
Oregon, Phone  
503-755-2710.  
Fax 503-755-  
2556.

Thanks very much. This started as an EFO project, but has expanded. I have reached 30 of you by phone, but no one contacted has addressed this particular issue. When finished, anyone interested is welcome to a copy.  
Thanks!

Chief Dave Crawford



## Appendix H: Canby Fire Response

From: "Ron Yarbrough" <ryarbrough [canbyfire.org](http://canbyfire.org)> To:

Subject: RE: firebulletin Request for Information Date: Mon, 7 Feb 2005 08:36:41 -0800

Plain Text Attachment [ Download File | Save to my Yahoo! Briefcase ]

"Thelma Denney" <[Thelma.Denney@state.or.us](mailto:Thelma.Denney@state.or.us)>

Hi, what we use is the info form the ATC-20 class. ron

----- Original Message

From: owner-firebulletin@emperor.dialoregon.net [<mailto:owner-firebulletin@emperor.dialoregon.net>] On Behalf Of Thelma Denney  
Sent: Monday, February 07, 2005 7:21 AM  
To: firebulletin@oregonvos.net  
Subject: firebulletin Request for information

I am developing a rapid damage assessment process to be added to our disaster plan. Does any fire district or department out there include rapid damage assessment either as a part of a disaster or all hazards plan? If not, does anyone have a stand-alone rapid damage assessment plan that they use? If you do I would like to look at it with the intent to incorporate portions into our own plan, with your permission.

My E-mail is crawford [df@yahoo.com](mailto:df@yahoo.com). If you wish you can sent the information by attaching it as a file. You can contact me directly at

Mist-Birkenfeld RFPD, 12525  
Hwy 202, Mist, Oregon, Phone  
503-755-2710. Fax 503-755-  
2556.

Thanks very much. This started as an EFO project, but has expanded. I have reached 30 of you by phone, but no one contacted has addressed this particular issue. When finished, anyone interested is welcome to a copy.

Thanks!

Chief Dave Crawford

## Appendix H: Canby Fire Response (continued)

<b>ATC-20 Detailed Evaluation Safety Assessment Form</b>				
<b>Inspection</b> Inspector ID: _____ Affiliation: _____ Inspection date and time: _____ <input type="checkbox"/> AM <input type="checkbox"/> PM			<b>Final Posting</b> from page 2 <input type="checkbox"/> Inspected <input type="checkbox"/> Restricted Use <input type="checkbox"/> Unsafe	
<b>Building Description</b> Building name: _____ Address: _____ Building contact/phone: _____ Number of stories above ground: _____ below ground: _____ Approx. "Footprint area" (square feet): _____ Number of residential units: _____ Number of residential units not habitable: _____			<b>Type of Construction</b> <input type="checkbox"/> Wood frame <input type="checkbox"/> Steel frame <input type="checkbox"/> Tilt-up concrete <input type="checkbox"/> Concrete frame <input type="checkbox"/> Concrete shear wall <input type="checkbox"/> Unreinforced masonry <input type="checkbox"/> Reinforced masonry <input type="checkbox"/> Other: _____  <b>Primary Occupancy</b> <input type="checkbox"/> Dwelling <input type="checkbox"/> Other residential <input type="checkbox"/> Public assembly <input type="checkbox"/> Emergency services <input type="checkbox"/> Commercial <input type="checkbox"/> Offices <input type="checkbox"/> Industrial <input type="checkbox"/> Other: _____ <input type="checkbox"/> Government <input type="checkbox"/> Historic <input type="checkbox"/> School	
<b>Evaluation</b> Investigate the building for the conditions below and check the appropriate column. There is room on the second page for a sketch.				
	Minor/None	Moderate	Severe	Comments
<b>Overall hazards:</b>				
Collapse or partial collapse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Building or story leaning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>Structural hazards:</b>				
Foundations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Roofs, floors (vertical loads)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Columns, pilasters, corbels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Diaphragms, horizontal bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Walls, vertical bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Precast connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>Nonstructural hazards:</b>				
Parapets, ornamentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Cladding, glazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ceilings, light fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Interior walls, partitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Elevators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Stairs, exits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Electric, gas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>Geotechnical hazards:</b>				
Slope failure, debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Ground movement, fissures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>General Comments:</b> _____				

Continue on page 2

## Appendix H: Canby Fire Response (Continued)

<b>ATC-20 Detailed Evaluation Safety Assessment Form</b>		<b>Page 2</b>
Building name: _____	Inspector ID: _____	
<p><b>Sketch (optional)</b> Provide a sketch of the building or damaged portions. Indicate damage points.</p>		
<p><b>Estimated Building Damage</b> If requested by the jurisdiction, estimate building damage (repair cost + replacement cost, excluding contents).</p> <p> <input type="checkbox"/> None  <input type="checkbox"/> 0–1%  <input type="checkbox"/> 1–10%  <input type="checkbox"/> 10–30%  <input type="checkbox"/> 30–60%  <input type="checkbox"/> 60–100%  <input type="checkbox"/> 100%         </p>		
Grid for sketch <div style="position: absolute; top: 0; right: 0; bottom: 0; left: 0; background-color: #f0f0f0; border: 1px solid black; grid-template-columns: repeat(20, 1fr); grid-template-rows: repeat(20, 1fr);"></div>		
<p><b>Posting</b> If there is an existing posting from a previous evaluation, check the appropriate box.</p> <p>Previous posting:    <input type="checkbox"/> INSPECTED    <input type="checkbox"/> RESTRICTED USE    <input type="checkbox"/> UNSAFE    Inspector ID: _____ Date: _____</p> <p>If necessary, revise the posting based on the new evaluation and team judgment. Severe conditions endangering the overall building are grounds for an Unsafe posting. Local Severe and overall Moderate conditions may allow a Restricted Use posting. Indicate the current posting below and at the top of page one.</p> <p> <input type="checkbox"/> <b>INSPECTED</b> (Green placard)                   <input type="checkbox"/> <b>RESTRICTED USE</b> (Yellow placard)                   <input type="checkbox"/> <b>UNSAFE</b> (Red placard)         </p> <p>Record any use and entry restrictions exactly as written on placard: _____</p> <p>_____</p> <p>_____</p>		
<p><b>Further Actions</b> Check the boxes below only if further actions are needed.</p> <p><input type="checkbox"/> Barricades needed in the following areas: _____</p> <p>_____</p> <p> <input type="checkbox"/> Engineering Evaluation recommended:               <input type="checkbox"/> Structural               <input type="checkbox"/> Geotechnical               <input type="checkbox"/> Other: _____         </p> <p><input type="checkbox"/> Other recommendations: _____</p> <p>_____</p> <p>_____</p>		
<p>Comments: _____</p> <p>_____</p> <p>_____</p>		

## Appendix I: Astoria Fire Response

Yahoo! Mail - crawford [df@yahoo.com](mailto:df@yahoo.com)  
1 of 1

Page

**From:** "Lenard Hansen" <[lhansen@astoria.or.us](mailto:lhansen@astoria.or.us)> ~j Add to Address Book  
**To:** crawford  
[df@yahoo.com](mailto:df@yahoo.com) **Subject:**  
disaster planning

**Date:** Mon, 7 Feb 2005 14:29:35 -0800  
**Chief,**

I would like to take advantage of the information that you get so don't hesitate to pass it along to me as I'm in the process of updating our plan. Lenard

## Appendix J: City of Medford Response

**Subject:** Rapid Damage Assessment

**Date:** Wed, 23 Feb 2005 09:17:16 -0800

**From:** "Brian E. Fish" <[Brian.Fish@cityofmedford.org](mailto:Brian.Fish@cityofmedford.org)> Mew Contact Details

**To:** crawford df@[yahoo.com](mailto:crawford df@yahoo.com)

Chief Crawford,

I received your email notice a while back about rapid damage assessment on the major domo list serve and would be interested in your results. Our fire department does not have any policy in place so I was unable to send you anything earlier. I too am in the process of an EFO research project and have thought it would be beneficial for our department to develop a policy in place regarding this subject.

I would be interested in the following information if you had it available:

- Your results
- Other departments you found that have rapid damage assessment policies
- Other examples of rapid damage assessment you may have found outside of our discipline

Thank you for any help you can give regarding this.

***Brian E, 'Fish'***

Battalion Chief, Training and  
EMS MEDFORD FIRE  
DEPARTMENT 200 S. Ivy St.  
Room 257 Medford, Oregon  
97501 (541) 774-2300  
[brian.fish@ci.medford.or.us](mailto:brian.fish@ci.medford.or.us)

## Appendix K: Response from Sandy and Boring Fire Districts

Yahoo! Mail - crawford [df@yahoo.com](mailto:df@yahoo.com)  
1 of 1

Page

A Lasher"  
<[sfd72fmo@hotmail.com](mailto:sfd72fmo@hotmail.com)> Add  
to Address Book

**To:** crawford [df@yahoo.com](mailto:df@yahoo.com)  
**Subject:** Rapid Damage Assess Forms  
**Date:** Wed, 9 Feb 2005 16:10:41 -0800

The attached form is from the Community Emergency Response Team manual (actually it might be one that we altered b/c we did not like the federal form). I am not sure what use you are thinking for the forms but I am the CERT manager for our Fire Districts and I know that it is frustrating to me that the feds want us to use this standardized CERT manual, but the Red Cross and Engineers perform "sidewalk surveys" which are done on different forms that I believe the feds use also. then Sandy Fire District (post last year's ice storm) developed a Damage Report form that could be used at our Fire Operations Center. Because when our FOC is up and running we dispatch a lot of our own calls - we needed a system better than the one we had. (a call taker would take info and pass to operations who would then assign crews) We worried about a call takers passing so many notes to ops that one may get lost in the shuffle and we wouldn't [know](#). so the form we created is in triplicate. One for the call taker, who passes the other two to operations, who gives one to the crews. This way at the end we can ensure that all the calls taken actually made it to operations and to the crews. we have not field tested this form yet, but did include a section on the back for estimating \$ amounts/loss which turned out to be a requirement from the feds and required a lot of work in "backtracking". Also during the reimbursement phase I sent my chief a list of "reimbursable costs" from the feds, it had to have been about 10 pages long and included things like: chain saw operations - \$2 an hour, running police cruiser - \$3 hr, etc (the \$ amounts are just examples) but the things reimbursed went beyond my imagination. So checking out that list may also help in developing your form.

I would love to have someone develop a statewide form that could be used by our CERT members, Fire Crews, Police, Red Cross, etc and that would qualify under whatever federal requirements there may be (this is actually one of my assigned projects for the Clackamas County Citizen Corps) and I am trying to get it done before Sept 10 and 11th when we have our Expo.

If you give me your mailing address I will also send you the Sandy Fire Form. It is a 4"x5" triplicate form.

Alice Lasher, FPO / EMT B  
Public Education and Information  
Officer Sandy and Boring Fire  
Districts 503-668-2728 desk  
phone 503-668-7941 SFD fax  
503-663-5792 BFD fax 971-563-  
3051 cell  
503-237-4152 pager



## Appendix K: Response from Sandy and Boring Fire Districts (Continued)

## DAMAGE ASSESSMENT

[illegible]

FOR USE BY EVERYONE

[www.cert-la.com](http://www.cert-la.com)

10/08/01

Summary of all hazards in area - fill out this form on your way to Command Post and give it to Incident Command.  
(\* for structure damage: h=heavy, m=moderate, l=light)

Incident Command: Choose an incident, put a slash in the assignment completed column, copy the address/location to the incident name section on Incident Briefing, and give Incident Briefing and Assignment Status to incident team leader. Copy address/location to Post-Incident Status and enter start time. When incident is complete, put a backslash in the assignment completed column and the incident end time on the Post-Incident Status form.

Appendix K: Response from Sandy and Boring Fire Districts (Continued)

*COPY FOR POC, CALL TAKER (TO KEEP FOR ACCOUNTING) & CREW*

DAMAGE REPORT		INCIDENT NUMBER
NAME		CALL TAKER
ADDRESS		
PHONE NUMBER		
PROBLEM		
DATE	TIME	
REPORT TAKEN BY		
<input type="checkbox"/> UTILITIES DAMAGED <input type="checkbox"/> POWER <input type="checkbox"/> GAS <input type="checkbox"/> WATER <input type="checkbox"/> TELEPHONE <input type="checkbox"/> LINES DOWN		<input type="checkbox"/> ROAD DAMAGED <input type="checkbox"/> BLOCKED <input type="checkbox"/> EROSION <input type="checkbox"/> FLOODED <input type="checkbox"/> PASSABLE BY VEHICLE
OTHER HAZARDS		
<b>PRIORITY: <input type="checkbox"/> YES <input type="checkbox"/> NO</b>		
E.O.C. OPERATIONS PHONE NUMBER:		
APPARATUS	RADIO FREQ.	TIME OUT
CREW PHONE #	TIME RETURNED	
ENGINEER	OFFICER	
CREW	CREW	
CREW	CREW	

COP SFD8 (11/95)



Appendix K: Response from Sandy and Boring Fire Districts (Continued)

SITUATION FOUND	
ACTION TAKEN	
DAMAGE LOSS IN ESTIMATED DOLLAR AMOUNTS	
- FOR FEMA REPORTS	
STRUCTURAL	\$
VEHICLES	\$
OTHER	\$
TOTAL ESTIMATED DOLLAR LOSS	\$
COMMENTS:	
CONSIDER LISTING EQUIP	
USED OR OTHER FEDERALLY	
REIMBURSED ITEMS	
CHAINSAW OPS	

## Appendix L: Response from Joseph Murray, Damage Assessment, OEM

**From:** "Joseph Murray" <[jmurray@oem.state.or.us](mailto:jmurray@oem.state.or.us)>  
**Subject:** re: Col. Co. mitigation plan - rapid damage assessment  
**CC:** [hargutv@co.columbia.or.us](mailto:hargutv@co.columbia.or.us), [dsigrist@oem.state.or.us](mailto:dsigrist@oem.state.or.us)

At 03:27 PM 2/20/2005, Chief David Crawford wrote:

"...Mist-Birkenfeld Rural Fire Protection District... new building is doing a great job for us and is now busy with community activities four or five times per week. We remember and appreciate the involvement of you and Dennis and Judy, among many others... I am working on an all-hazards mitigation plan. One of the elements I would like to include is rapid damage assessment. By that I mean mobilizing and training local people to provide quick and accurate assessment data regarding their part of the larger community. Additionally we are planning to incorporate our emergency responders into the plan by adding training for windshield surveys and direct observation and reporting. Does the state plan address these issues? In reading through it there is a strong emphasis on partnership and building a strong local government component, but there is no mention of rapid damage assessment that I have identified. What is the role of the State of Oregon during a disaster or major emergency and what is the expectation for the local governments?... Thanks again for the great job you all do for us. I look forward to your reply."

Chief Dave Crawford  
 Mist-Birkenfeld RFPD  
 12525 Hwy 202 Mist,  
 Oregon 97016  
 503.755.2710 phone  
 503.755.2556 fax  
 503.791.4628 cell  
 crawford [df@yahoo.com](mailto:df@yahoo.com)

Hi Chief Crawford,

Good to hear from you after all this time! You have asked several good questions.

We consider damage assessment to be a response and recovery function, not a hazard mitigation function, so you will find little or no mention of it in the state NHMP. I do have extensive information available on this topic, and may be teaching it at an "Emergency Management 101" course near you sometime later this year. Let me know if you want me to put you on a notification list for that course. It would be the best single source of info. for answering the questions you have posed above.

In the meantime, the best single source of [info. to](#) which I can direct you is the following:

[http://www.osp.state.or.us/oem/recovery/drag/drag\\_toc.htm](http://www.osp.state.or.us/oem/recovery/drag/drag_toc.htm)

Undoubtedly, what you read here will lead to questions, but I recommend reading first, then identifying specific questions you want answered. Quite a bit of the DRAG isn't up on our website yet, so I'll need to

Appendix L: Response from Joseph Murray, Damage Assessment, OEM, Page 2

Yahoo! Mail - crawford df([a-yahoo.com](mailto:df@yahoo.com))

Page 2 of 2

send you individual files as you identify what you need. I am the lead damage assessment person at OEM.

Please work with County Emergency Management Director, Vicki Harguth, to see that your damage-impact assessment efforts are integrated with the county's efforts. Your info. would go to the county before coming to OEM during an event (or exercise).

It is good to know that you are working on an all-hazards mitigation plan for the fire district. If you need info. on the FEMA requirements for these plans, please let me know and I will send you the FEMA checklist so you can use it for self-evaluation of your work as the plan is developed. FEMA reviewed the draft Columbia County "Multi-Hazard Mitigation Plan" on February 17. It still needs a little work to meet the FEMA criteria. I encourage you to work with Vicki on your mitigation planning effort as well.

Best wishes,

joseph murray  
copies to:

Vicki Harguth, County Emergency Management Director  
Dennis Sigrist, State Hazard Mitigation Officer